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WEED ABSTRACTS

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NOTES FOR READERS OF WEED ABSTRACTS

Weed Abstracts endeavours to provide a comprehensive coverage of the world's literature on weeds, weed control and closely allied subjects. To this end over 370 journals and nearly 100 annual reports are regularly searched. Other journals, reports, bulletins, etc. are abstracted as they are seen. Additional coverage is obtained through agreements with other abstracting organisations.

Abstractors

L. Kasasian (Editor)
D.M.L. Sparrow
J.W. Banfield
M.E. Lewis

Correspondence about subscriptions to Weed Abstracts should be addressed to: The Treasurer, British Weed Control Council, c/o National Association of Corn and Agricultural Merchants, Cereal House, 58 Mark Lane, London, E.C.3. Other correspondence should be addressed to the: Information Section, A.R.C. Unit of Experimental Agronomy, Department of Agriculture, Parks Road, Oxford.

As far as possible journal abbreviations given in the World List of Scientific Periodicals are used. Holding libraries in Oxford and elsewhere are also taken from the World List, e.g. O.BO. = Botany Department, Oxford. Numbers at the end of abstracts, e.g. 75(492) are for internal use only.

When a paper is by more than one author, only the address of the first author is given.

Where an abstract is taken from an abstracting journal the acknowledgement follows the abstract, e.g. Herb.Abstr., 2,163. Where it is only quoted in part the acknowledgement is preceded by the word "from", e.g. From Biol.Abstr., 2,294.

The Information Section is always pleased to receive comments and suggestions for the improvement of Weed Abstracts.

* An asterisk before the author's name indicates that only the title of the paper has been seen.

Continued from the inside back cover.

ac	- acre(s)	in.	- inch(es)	p.s.i.	- pounds per square in.
a.e.	- acid equivalent	kg	- kilogram(s)	v/v	- volume/volume
a.i.	- active ingredient	l	- litre(s)	w/v	- weight/volume
cm	- centimetre(s)	lb	- pound(s)	w/w	- weight/weight
d.b.h.	- diameter at breast height	m	- metre(s)	>	- greater than
		ml	- millilitre(s)	<	- less than
ft	- foot (feet)	oz	- ounce(s)	#	- pounds per acre
g	- gram(s)	post-em.	- post-emergence	±	- with or without
gal	- gallon(s)	pre-em.	- pre-emergence		
ha	- hectare(s)	p.p.m.	- parts per million		

Language abbreviations: an initial capital denotes the language of the article, a small letter that of the summary: - Dan. - Danish, Du. - Dutch, E. - English, F. - French, G. - German, It. - Italian, Jap. - Japanese, Nor. - Norwegian, Russ. - Russian, Span. - Spanish, Sw. - Swedish.

See also 251,358,360,361,362,363,367,368,369,375, 426,427,428,429,468,478.

210. BONDARENKO, D.D. and WILLARD, C.J. (State Univ., Ohio, U.S.A.) Herbicides to control weeds in field crops 1959. Ext. Leafl. Ohio agric. Coll., 1959, 75, pp.8.
The recommendations listed are the same as those for 1958 with the following exceptions: for experimental use only simazine pre-em. in maize, 2,4-DB post-em. in forage legumes, amitrol post-em. in oats, and EPTC pre-planting in sugar beets; in maize, CDAA is no longer suggested for use except + 2,4-D pre-em. - J.W.B. [44(77.1)]

211. CHURCHILL, B. and GRIGSBY, B. (Agric. Exp. Sta., State Univ., E. Lansing, Michigan, U.S.A.) Weed control in field crops. Ext. Folder Mich. State Univ., 1959, F-222, pp.12, (Revised).
Gives recommendations for herbicides for weed control in crops, pastures and uncultivated ground. The main differences from the preceding edition are additional recommendations, viz:- maize - simazine 2 # pre-em. and CDAA 4 # at emergence; established lucerne - dalapon 3-5 # or CIPC 5 # in the autumn; lucerne, trefoil, clovers and field beans - EPTC 3 # pre-planting; soybeans - dinoseb 3-6 #, CIPC 4-8 # or CDAA 4 # pre-em.; potatoes - dalapon 3 # at emergence; sugar beet - endothal 4 # at planting; mint - diuron 1 # when crop is 1-2 in. tall. - L.K. [69a(77.4)]

212. VEATCH, C., SCHUBERT, O.E. and CARVELL, K.L. (Agric. Exp. Sta., Morgantown, W.Va, U.S.A.) Weed control - 1959 suggestions. Circ. W.Va agric. Exp. Sta., 1959, 106, pp.18. [W2(75.5)]

213. GORDON, D.V. (Ivon Watkins Ltd., New Plymouth, N.Z.) Simazine. Proc. 12th N.Z. Weed Control Conf., 1959, 39-42.
The properties, mode of action and factors affecting the activity of simazine are reviewed and its use as a long-term selective weedkiller in vines, asparagus, maize, field beans and some horticultural crops. Simazine 4 # pre-em. gave up to 50% weed control (mainly Polygonum hydropiper) in maize; 2,4-D (amine) 1 # and 2,4-D (sodium) 1.5 # post-em. gave 95% weed control but damaged crop. Simazine and 2,4-DB increased yields. Simazine 20 # + amitrol did not control paspalum. - M.E.L. [O.W.]

214. SOUTHERN RHODESIA. Rep. Grasslands Res. Sta., Marandellas, Sth. Rhodesia, 1957, pp.63, tabs.
p.25. 16 Combinations of herbicides and cultivation were tested for their effect on maize yield. The following table shows the results (in bags/ac):-

	Number and date of cultivations			
	0	1	2	3
		Dec.24	Dec.24 Jan.28	Dec.1 Dec.24 Jan.28
No herbicide	4.1	11.3	13.9	16.5
2,4-D (amine) 1 # a.e.	4.4	13.2	15.3	-
2,4-D (amine) 2 # a.e.	9.9	15.7	17.3	-
MCPA (salt) 1 # a.e.	6.9	17.2	16.7	-
MCPA (salt) 2 # a.e.	9.0	17.5	15.5	-

All sprays were applied in 20 gal water/ac. - J.W.B. [O.W.]

215. * UBRIZSY, G. (Res. Inst. Plant Prot., Budapest, Hungary). Novenyvedelem a korszeru kukoricatermesztesben. [Plant protection in up-to-date maize growing - with special reference to chemical weed control.] Magyar Tudomanyos Akad. Agrar., 1959, 107-27, (Hungarian), figs.5, tabs.5, bibl.34. [9(439)]

216. VOEVODIN, A.V. [Chemical methods of weed control.] Kukuruza, 1958, (12), 35-6, (Russ.)
A review of experimental data on chemical weed control in maize in the various edaphic and climatic conditions in the U.S.S.R. and of the use of different compounds. - Ref. Zh. Biol., 1959, 79576.

217. * UBRIZSY, G. (Res. Inst. Plant Prot., Budapest, Hungary). Vegyszeres gyomirtas

gabonavetesekben. [Chemical weed control in cereals.] Magyar Tudomanyos Akad.Agrar., 1958,393-414, (Hungarian), figs.8,tabs.5, bibl.18. [5(439)]

218. WIBERG, H. (Kungl.Lantbrukshögskola, Uppsala,Sweden). Fenoxithioättiksyrors värde som ogräsbekämpningsmedel. [The value of phenoxythioacetic acids as herbicides.] Växtodling, 1959, 10,156-62, (Sw.e.), tabs.14,bibl.3.
Reports on laboratory and field tests with thio-2,4-D, thio-MCPA and thio-2,4,5-T on peas, barley, wheat, linseed and white mustard; all proved to be less selective than the corresponding phenoxyacetics. - Mainly from Author's Summary. - L.K. [O.W.]

219. ORISHCHENKO, Ya.P. [Chemical weed control in millet.] Selsk.Povolzhya, 1959, (1),64-7, (Russ.).
In the arid south east steppes PCP (sodium) + OP-7 [a wetter] has been successfully used for weed control in millet when applied at emergence. 2,4-D (sodium and butyl) and 2,4,5-T (butyl) are also used. Rates, dates and means of application are indicated. - Ref.Zh.Biol., 1958, 79578.

220. ÅBERG, E. (Kungl.Lantbrukshögskola, Uppsala,Sweden). Klorerade fenoxiättiksyrors inverkan på kvaliteten hos spannmål och oljelin. [The effect of chlorinated phenoxyacetic acids on cereal and linseed quality.] Växtodling, 1959, 10,207-23, (Sw.e.), tabs.16,bibl.10.
MCPA (sodium) 0.75-3 kg/ha, 2,4-D (amine) 0.42-3.36 kg/ha and 2,4-D (ethyl) 0.275-0.826 kg/ha were applied to spring wheat (var. Kärn II) in 3 years and 2,4,5-T in 1 year at the early (3-5, 2-3 or 2-4) leaf stages, medium (5-7 or 4-6) or late (8-10 or 10-15) leaf stages; there was a tendency to decreased germination and increased gluten and diastase activity after the application of high rates; there was no effect on bushel weight or 1000 grain weight. In 2 years Herta barley was sprayed with 2,4-D, MCPA and 2,4,5-T at 3 stages of growth - the effects on yields and abnormalities is given; no definite effect on bushel weight, 1000 grain weight or germination was found and 2,4-D had no obvious effect on cellulose activity. Linseed was sprayed on 3 occasions when between 5 and 30 cm tall with MCPA, 2,4-D and 2,4,5-T; high rates delayed flowering caused deformities and decreased yields and germination; there was little effect on oil content and none on protein. - Partly from Author's Summary. - L.K. [O.W.]

221. FRIEDERICH, J.C. Hoe teelt men kwaliteitsvlas? [How is high quality fibre flax grown?] Meded.Proefsta.Akkeren Weidebouw, 1959, 21,pp.14.
Includes recommendations on weed control. - From Field Crop Abstr., 12,(4),1923. - D.M.L.S.

222. NELSON, R.T. (Gt Western Exp.Sta., Longmont,Colorado,U.S.A.) Chemical weed control. Through Leaves, 1959, 47,(1) 19-23, tabs.
This general article includes a table giving recommendations for weed control in sugar beet and sorghum and certain other common agricultural crops and for the control of a number of common weeds. - L.K. [41(78.8)]

223. NETHERLANDS. Versl.en Meded.Rijkslandbouwconsulentschap Westelijk Drenthe, 1958, pp.176, (Du.).
p.99-100. Weed control in rye. Autumn applications of DNOC gave higher yields than spring application of MCPA, mecoprop or DNOC + MCPA.
p.104-107. Weed control in oats. DNOC + MCPA applied on May 2nd gave higher grain yields than DNOC or MCPA applied on May 28th. In another trial, plots sprayed with mecoprop on May 13th outyielded those sprayed with DNOC or MCPA on the same date or with mecoprop or MCPA on June 3rd.
p.157-161. Weed control in arable and grassland. - L.K. [O.W.]

224. UNITED STATES. Adubos para fumais. [Fertilizer for tobacco plantations.] A Fazenda, New York, 1959, 54,(4),25-27.
This report published by the Committee which attended the conference on tobacco at Athens, Georgia in 1958, includes recommendations on weed control. - From Bull.agric.Congo belge, 50,(6),1729. - D.M.L.S.

225. STEPHENSON, K.O. (Agric.Exp.Sta., Fayetteville,Arkansas,U.S.A.) Mechanized weed control in cotton. Arkansas Fm Res., 1959, 8,(3),6-7, tabs.2,figs.
The most reliable mechanized system of weed control for Arkansas cotton growers has been found to consist of pre-em.

chemical application, post-em. herbicidal oil applications, and flame, and sweep cultivations. A parallel burner setting has recently been used which has distinct advantages over the cross flaming method; it can be applied earlier, larger weeds can be killed over a wider area of the row, and the precision of the burner settings and the smoothness of the row are less critical. A figure illustrates the optimum burner settings for early parallel flaming when the cotton plants are from 4-6 in. high. Research results have shown that early flowering in combination with pre- and post-em. chemicals can reduce hoe labour as much as 75% in many cases. - J.W.B. [22(76.7)]

226. KONDRATYUK, V.P. and LOZOVATSKAYA, M.A. [The use of herbicides for weed control in cotton.] Selsk.Uzbek., 1958, (5), 40-3, (Russ.)
With reference to the use of DCU, propham, chlorpropham, TCA, dinitrophenol, diesel oil and carbonileum. - From Ref.Zh.Biol., 1959, 88457. - L.K.

227. DAY, B.E., JOHNSON, E. and DEWLEN, J.L. (Univ.Calif.Citrus Exp.Sta.,Riverside,Calif., U.S.A.) Volatility of herbicides under field conditions. Hilgardia, 1959, 28,(11), 255-67, figs.7,tabs.1,bibl.10.
Small plots in cotton fields exposed to high summer temperatures were sprayed, care being taken to prevent spray drift. Injuries to the surrounding plants were recorded at intervals. 2,4-D (alkanolamine and isopropylamine) affected only a small area. A 2,4-D (acid) was somewhat more volatile. Butoxyethanol 2,4-D, propyleneglycol butyl ether 2,4-D and tetrahydrofurfuryl 2,4-D caused extensive injuries. Propyleneglycol butyl ether 2,4,5-T appeared to be as volatile but produced only minor symptoms. No symptoms of amitrol injury appeared outside the treated area. With this exception, none of the formulations tested could be considered entirely free of volatility hazard under these extreme conditions of high temperature. The distribution of the injured plants indicated that vapour was moved by day winds but not by night winds. - C.C.McC. [O.RE.]

228. STANIFORTH, D.W., WEBER, C.R., and LOVELY, W.G. (State Coll.,Ames,Iowa,U.S.A.) Cultivation for weed control in soybeans. Soybean Digest, 1959, 19,(6),6-8.
The use of a rotary hoe after weed germination but before emergence is recommended. The first treatment is usually made 3-5 days after crop emergence, a second 5 days later and a third if necessary after a further 5 days. Sweeps and shovels may be used between the rows later. - L.K. [(43)77.7)]

229. EDDOWES, M. (Harper Adams Agric.Coll., Newport,Shropshire,England). Weed control in maize. Tech.Bull.Harper Adams agric.Coll., 1959, M.2., pp.5, tabs.3,bibl.2.
In an unreplicated trial maize was treated with simazine and atrazine 1-2 # pre-em. and with MCPA 1.25 # in 10 gal when crop was 6-9 or 12-15 in. tall. MCPA gave better weed control than the triazines but damaged the crop; however, there were no significant differences between the yields of the variously treated plots. The response to atrazine and simazine is given as: susceptible - fat hen [Chenopodium album], charlock [Sinapis arvensis], chickweed [Stellaria media], mayweed, annual meadow grass [Poa annua], field pansy [Viola arvensis]; moderately susceptible - fumitory [Fumaria officinalis] and speedwell [Veronica spp.];moderately resistant - orache [Atriplex patula]; moderately resistant to resistant - redshank [Polygonum persicaria], field bindweed [Convolvulus arvensis], cat mint [Nepeta cataria], couch [Agropyron repens] and field vetch [Vicia sp.] and resistant - knotgrass [Polygonum aviculare], creeping thistle [Cirsium arvense], docks [Rumex spp.] and (to simazine) potato. - L.K. [400(42)]

230. NETHERLANDS. Versl.Landbouwkundig Onderzoek Noordelijk Groningen, 1958, pp.133, (Du.)
p.81-92. Weed control. Includes the information that DNOC 9 kg + sodium arsenite 2 l in 800 l water/ha applied to grass seed crops 8 cm tall in the summer soon after applying nitrogen has given excellent results. - L.K. [O.W.]

231. BENGTSSON, A. and WALTHER, K. (Kungl. Lantbrukshögskola,Uppsala,Sweden). Besprutningsförsök med natriumarsenit mot ogräs i raps. [Spraying experiments with sodium arsenite for weed control in rape.] Växtodling, 1959, 10,163-71, (Sw.e.), figs.6, tabs.8,bibl.12.
In laboratory tests sodium arsenite applied as small droplets (92μ) had a much greater effect on Tripleurospermum inodorum [Matricaria inodora], Galium aparine and spring sown rape than large droplets (560μ). When a given rate of sodium arsenite was applied

to winter rape in 60, 300 or 750 l/ha of water, damage increased with volume rate. In a field trial Arsenol (50% As_2O_3) was applied to winter rape on May 9th (rape 8-10 cm high) or 21st (rape 15-20 cm high) at 5, 10 and 15 l/ha in 500 l of water. All treatments significantly increased the yield of rape seed without affecting thousand seed weight or germinability. All the early treatments outyielded all the late and gave better control of Matricaria and Capsella bursa-pastoris (the main weeds), but not of Thlaspi arvense; the highest rates gave the best weed control, however, the lowest rates gave the best yields. The selective effect is attributed to differential retention; the contact angles of water are given as: rape 150°, Matricaria inodora 70° and Galium aparine 66°. - L.K. [O.W.]

232. THOMPSON, F.B. (Rukuhia Soil Res.Sta., Hamilton,N.Z.) Weed control in fodder crops with monochloroacetate. Proc.12th N.Z.Weed Control Conf., 1959, 99-105, tabs.2,bibl.2.

In replicated experiments in Horotiu sandy loam, chou moellier (4 true leaves) and swede were resistant to MCA 15 # in 30 gal. MCA 15 # severely damaged fodder beet 2-3 in. high (4 leaves) and caused slight retardation but inefficient weed control in beet 6-8 in. (8 leaves).

Weeds controlled by MCA 15 # were Polygonum persicaria 6-8 in., Amaranthus retroflexus 6-8 in. and Spergula arvensis 6 in. (but in South Island 25 # was unsuccessful) and Solanum nigrum, when very small. MCA 20 # gave only 50% kill of Coronopus didymus. Resistant weeds were Chenopodium album and grasses including Panicum capillare, Digitaria sanguinalis and Portulaca oleracea. Chlorpropham 4 # pre-em. controlled P. persicaria in fodder beet.

MCA 20 # slightly reduced the yield of peas (compared with the handweeded control) when applied at the 8 node, but not the 3 node, stage. - M.E.L. [O.W.]

233. MEEKLAH, F.A. (Invermay Res.Sta., Mosgiel,N.Z.) Lucerne tolerance to dalapon. Proc.12th N.Z.Weed Control Conf., 1959, 30-8, tabs.8,bibl.7.

In tolerance trials on weed free 4 year old lucerne (1) early spring applications of dalapon 10 # caused severe reductions in yield at the first hay cut of the season but there was no permanent or prolonged effect on the yield. Treatment after the first cut, after the last cut and in the late dormant stages, delayed the recovery of lucerne. (2) early spring application of dalapon 5 # (74% a.e.) + TCA 5 # (79.3% a.e.) on lucerne 6 in. high trimmed of 90% leaf area caused no yield differences from second cut onwards, between trimmed, untrimmed and control plots.

Similar yields to tolerance trials resulted from grass-infested 4 year old lucerne.

In the dormant treatments, flatweed infestations, particularly Bellis perennis, was more severe but grass control slightly better. Dalapon 2 and 3 # in early spring on 18 month old lucerne controlled Poa annua more effectively than handweeding; 5 # caused yield reduction at the first cut but to a lesser extent than TCA 10 # and 15 #. The varieties, N.Z. Certified, Du Puits, Socheville, Hunter River, Provence, Rhizoma, Med. glutinosa did not differ in susceptibility to dalapon 5 # in 12 gal.

It was concluded that optimum time for dalapon treatments was early spring when grasses were reasonably susceptible, growth suppression of lucerne least and root absorption reduced due to quicker bacterial decomposition. No beneficial residual effects of TCA were noted. Dalapon 5 # killed Yorkshire fog [Holcus lanatus] and 5 # in spring barley grass [Hordeum murinum], but 6 # in spring failed to control Indian doub [Cynodon dactylon]. - M.E.L. [O.W.]

234. FRIEDERICH, J.C. (Bowlespark 19, Wageningen,Netherlands). Le role de la plante sous abri dans la culture du lin textile. [The influence of an undersown crop on fibre flax.] Fibra, 1959, 4,(1),9-11, (F.e.)

Includes the information that DNOC (sodium) if used to control weeds in flax is injurious to lucerne and more so to Medicago lupulina. - From Field Crop Abstr., 12,(4),1924. - D.M.L.S.

235. MATTHEWS, L.J. (Dep.Agric.,Wellington.N.Z.) Use and limitations of chemical ploughing. Proc.12th N.Z.Weed Control Conf., 1959, 43-8, tabs.1.

The main factors governing the satisfactory use of chemical ploughing for pasture and crop establishment in 200 trial experiments were:- high fertility soil or soil previously top-dressed; rainfall of over 30 in. per annum, particularly in low-fertility soils; favourable climatic conditions at time of oversowing followed by mob sheep grazing for brief periods in the case of pasture and pest control.

Since the rate of herbicidal absorption varies (e.g. Festuca rubra and Danthonia spp. slower than Agrostis tenuis), and the residual toxicity of dalapon + amitrol is harmful to cereals, an interval should elapse between spraying and oversowing. Dalapon 5 # + amitrol 1 # eliminated Nassella trichotoma, Erica lusitanica and Pennisetum clandestinum but had to be supplemented by hand cutting for Paspalum dilatatum, Pteridium esculentum, Paesia scaberula and Cassinia leptophylla. Dalapon 10 # + amitrol 2 # killed spring grasses in crops but extra chemicals were required for Rumex acetosella, Ranunculus spp., Achillea millefolium, Stellaria media, Cerastium spp., Erodium spp. and [Trifolium spp.]. Overall cost of chemical ploughing and cultivations + herbicides were the same despite higher seeding rates of crops in the former, but cultivations gave a purer pasture. In crop establishment reduction of interplant competition by the chemical method enables applied or existing fertility to be kept near the surface.

Crops used in trials were brassicas, soft turnips, chou moellier, swedes and cereals. The method was unsuccessful with lucerne. - M.E.L. [O.W.]

236. CULLEN, N.A. and MEEKLAH, F.A.H. (Invermay Res.Sta.,Mosgiel,N.Z.) Seeding rates and weedkillers in pasture weed control. Proc.12th N.Z.Weed Control Conf., 1959, 54-8, tabs.1,bibl.7.

In a trial on pasture establishment on Taieri alluvial silt loam, a high rate of ryegrass [Lolium spp.] seeding (30 lb) gave control of Chenopodium album, Capsella bursa-pastoris, Stellaria media, Fumaria officinalis, Spergula arvensis, Rumex obtusifolius, some Polygonaceaespp. and Poa annua, but the slow establishing cocksfoot [Dactylis glomerata] (5 lb) and timothy [Phleum pratense] (3 lb) were also affected. 2,4-DB (sodium) 1 # a.e. 7 weeks after sowing gave good weed control in light-ryegrass plots and was less effective, particularly against C. bursa-pastoris and S. arvensis in no-ryegrass plots. The majority of weeds were killed by the first cut, 10 weeks after sowing. At the second cut, yields from sprayed plots in light-ryegrass treatments were about 50% > than unsprayed, and yields in no-ryegrass treatments were doubled. In subsequent cuts, yields from sprayed plots were superior. Spraying slightly decreased density of ryegrass, timothy and red clover [Trifolium pratense] but increased white clover [T. repens]. - M.E.L. [O.W.]

237. FITZGERALD, J.N. (J.H. Barbour and Son Ltd.,Wellington,N.Z.) A review on the use of Phenoxybutyrics in New Zealand. Proc.12th N.Z.Weed Control Conf., 1959, 49-53, bibl.16.

Reviews published information on weed control by 2,4-DB and MCPB in pasture, cereals, peas, clovers, ryegrass, cocksfoot, timothy, dogstail, and lucerne. - M.E.L. [O.W.]

238. GOLOVKOVA, A.G. [Chemical weed control in pastures and meadows.] Uch.Zap.Biol.Fak. Kirg.Univ., 1958, (7),91-119, (Russ.). From Ref.Zh.Biol., 1959, 79574.

239. THOMPSON, A. (Rukuhia Soil Res.Sta., Hamilton,N.Z.) The effect of dalapon on various grass species. Proc.12th N.Z.Weed Control Conf., 1959, 24-9, tabs.4,bibl.1.

Resistance of ryegrass to dalapon 5 # (73% a.e.) was greater when treated during a period of increasing (September or April) rather than reduced growth activity (November or June). The susceptibilities of young ryegrass and cocksfoot decreased with increasing height and maturity. The effects of dalapon 15 # on clumpy mature cocksfoot were most severe when applied to the tallest regrowth. Tall fescue was more susceptible to dalapon 20 # + amitrol 2 # (50% active) when applied in February or March, rather than November or January. - M.E.L. [O.W.]

240. * THOMPSON, F.B. Weeds in new pastures. Proc.Ruakura Fmrs' Conf., 1958, 159-63.

241. TREW, E.M. and LONG, J.A. (Agric.Exp. Sta.,Texas,U.S.A.) Weed control in Texas pastures. Ext.Bull.Tex.agric.Coll., 1958, B-892, pp.20, figs.17,tabs.2.

This bulletin discusses prevention, and mechanical and chemical control of weeds in cultivated pastures, and various types of sprayers. An extensive table lists 170 weeds giving common and botanical names, whether they are annuals or perennials, their growing season and habitats in Texas, response to 2,4-D (susceptible (S), intermediate (I) or resistant (R)), and control methods. Included in the table are the following: Colutea arborescens (I-R), Helianthus ciliaris (I), Heterotheca subaxillaris (I), Jacquemontia tamnifolia (S), Gossypianthus lanuginosus (I-R), Eupatorium capillifolium (I-R), Engelmannia pinnatifida (I), Polypremum procumbens, Caperonia palustris (S-I), Petunia parviflora (S), Psoralea esculenta (I), Euphorbia marginata (I-R), Euphorbia bicolor (I-R), Eupatorium compositifolium (I), Hordeum

pusillum (R), Avia caryophyllaea (R), Agrostis hyemalis (R), Chloris verticillata (R) and Leptoloma cognatum (R). - J.W.B. [126(76.4)]

242. UBRIZSY, G. (Res.Inst.Plant Prot., Budapest, Hungary). Vegyszeres gyomirtas a hazai reti - es legeloteruleteken. [Chemical control of weeds in meadows and pastures in Hungary.] Novenytermeles, 1958, 7,(4),305-20, (Hungarian,russ.e.), figs.4,tabs.3,bibl.17.
Ononis spinosa has been controlled by applying herbicides for several years. The author considers that for grassland spraying to have any permanent effect at least 2 annual sprayings should be carried out for 2-3 years. He suggests that annual spraying may become a part of the routine of grassland husbandry. - From Author's Summary. - L.K. [4(439)]

243. UBRIZSY, G. (Res.Inst.Plant Prot., Budapest Hungary). Chemische Unkrautbekämpfung auf Wiesen- und Weideflächen. [Chemical weed control in meadows and pastures.] Acta Agron.Akad.Soi.Hung., 1959, 9,(1/2),97-116, (G.g.e.russ.), figs.5, tabs.4,bibl.15.
A review of work carried out in Hungary and elsewhere on the use of herbicides for weed control in grassland. One table gives the results of spraying (unspecified) growth regulator herbicides twice a year for 4 years on the botanical composition of grassland and another table the comparative effects of single applications of 2,4-D, MCPA and 2,4,5-T on 52 species. - L.K. [11(439)]

244. VARGAS, M.J. and GILBERT, W.B. Control de malas hierbas en los pastales. [Weed control in pastures.] Bol.trimestr. exp.agropec., 1957, 6,(1),17-22, (Span.)
In grasslands of the forest regions of the Southern Argentine field experiments were carried out on the use of 2,4-D + 2,4,5-T for the control of weeds, particularly of the shrubby types Vernonia monzonensis and Urticasia gigante. A 1% solution gave >90% control. It is recommended that the weeds first be cut to the height of the grass. - Ref.Zh.Biol., 1959, 88459.

Noted

245N. RHODES, G.N. and MATTHEWS, J.N. (Univ.Tennessee,U.S.A.) Chemical weed control in tobacco beds. Ext.Pamphl.Tenn. agric.Coll., 1958, 395,pp.4, figs.1. [13(76.8)]

246N. WALTHER, K. (Kungl.Lantbrukshögskola,Uppsala,Sweden). Fenoxsmörsyrors och fenoxipropionsyrors verkan på kulturväxter och ogräs. [The effect of phenoxybutyric and phenoxypropionic acids on crops and weeds.] Växtodling, 1959, 10,188-206, (Sw.e.), figs.6,tabs.15,bibl.6.
Mainly with reference to the use of MCPB in peas, red clover and barley and the effect of mecoprop on Galium aparine, Polygonum convolvulus, Lamium spp., Myosotis arvensis, Lapsana communis, G. mollugo and cereals. - L.K. [O.W.]

HORTICULTURAL, ORNAMENTAL AND PLANTATION CROPS

See also 212,218,232,237,338, 355,356,357,358,361,468,478.

247. SWITZER, C.M. (Dep.Bot.,Agric. Coll.,Ontario,Canada). Weed control and 2,4-D injury. Addresses and Proc.Ontario Soil & Crop Impr.Ass., 1958, 99-101, tabs.1.
Experiments were carried out to characterize 2,4-D and 2,4,5-T effects on turnips so that injury caused by them might be positively identified. Turnips were sprayed at various stages of growth, but in most cases when they had 4 true leaves. Within 1 day of treatment downward bending of the leaf stalk occurred, followed by a thickening of the leaf stalk base after about 1 week. After 2 weeks, all plants treated with 100 p.p.m. were dead or dying; 50 and 25 p.p.m. had caused marked top and root injury, and top size was reduced 40-60% compared with the controls; roots were distorted and the skin roughened, particularly near the top. An elongation of the upper part, giving an "hour-glass" effect, was observed in turnips sprayed with 5 p.p.m. or more. Seven weeks after treatment with 5 or 10 p.p.m., plants were as big as, or bigger than, the checks, but those sprayed with 10 p.p.m. were very rough and scarred; 25 and 50 p.p.m. had led to badly elongated, distorted, proliferated roots; 2,4-D 10 p.p.m. had killed all plants, but those treated with 2,4,5-T 100 p.p.m. continued to grow, although they were very small and distorted. Turnips treated when 1-2 in. in diameter developed a ring of carotene below the root surface; it was suggested that this increase in carotene might be used as a

symptom of 2,4-D injury, but it can also be caused by mechanical injury. Extensive experiments failed to show significant differences in the nitrogen and sugar content of young turnips treated with a low concentration of 2,4-D; however, there was a marked increase in nitrogen and a decrease in sugar in turnips treated when about 2 in. in diameter.

In conclusion, with the possible exception of using carotene build-up as a diagnostic tool, there appeared to be no easy chemical way of identifying 2,4-D damage in young turnips; however, changes in the external appearance of turnips are sufficiently characteristic to give the required information. -J.W.B. [O.W.]

248. VERLAAT, J.G. (Proefsta.Groenteteelt, Alkmaar,Netherlands). Onkruidbestrijding in spinazie. [Control of weeds in spinach.] Groenten en Fruit, 1959, 14,(46),1393-4, (Du.), figs.4.

Sulphuric acid and oils + PCP do not usually injure spinach when used as pre-em. sprays; however, oils alone are too expensive and oils + PCP can cause injury if rain follows shortly after spraying, and must be applied 3 or 4 days before emergence instead of only 2 as with sulphuric acid. Sulphuric acid has increased yields more than can be accounted for by the removal of weed competition - it is suggested this may be due to its rendering calcium more readily available. CIPC pre-em. has caused considerable damage. - L.K. [187(492)]

249. VOSE, H.H. (Agric.Exp.Sta.,Univ., Fayetteville,Ark.,U.S.A.) Controlling weeds in spinach. Arkans.Fm Res., 1959, 8,(4),9.

CIPC 0.5, 0.25 and 0.125 # and CDEC 1, 2 and 3 quarts/ac applied together in all possible combinations immediately after planting spinach in February on a sandy loam, gave complete control of Lamium amplexicaule at all rates but caused some reduction in spinach growth and yield. - D.M.L.S. [23(76.7)]

250. NETHERLANDS. Onkruiden en ziekten in uien en sjalotten. [Weeds and diseases in onions and shallots.] Stichting Ned. Uien Fed., 1959, pp.20.

For pre-em. use in sown onions, silver onions, onion sets and pickling onions, PCP in oil and sulphuric acid are recommended. Post-em. sulphuric acid may be used and chlorpropham; no residues of chlorpropham are permissible in onions for eating - thus in sown onions chlorpropham should not be applied later than the end of June, and in silver onions, onion sets and pickling onions not later than the end of May. In second year onion sets and shallots chlorpropham may be used shortly after planting. Promising results have been given by simazine and it is suggested for trial use in seed onions at 1-1.5 kg/ha in 800-1000 l of water in June or July. - L.K. [189(492)]

251. UNITED STATES. Mimeo.Reps.Roberts Chem.Inc.

Reports of various trials are included in which no crop reductions were apparently caused when Herbisan 5 [bis(ethyl xanthic) disulphide] was used pre-em. at 5-20 # and post-em. (1-2 leaf stage) at 10 # in onions or pre-em. in soybeans at 10 #. The compound is being widely used in Michigan as an overall post-em. spray in onions at ca. 5 # in 100 gal water: this results in only slight burn and is said to give excellent weed control. - D.M.L.S. [O.W.]

252. van OORSCHOT, J.L.P. (Inst.Biol. Scheik.Onderz.,Wageningen,Netherlands). Enkele effecten van chloor-IPC op kiemplanten van uien. [Some effects of chlorpropham on onion seedlings.] Jb.Inst.Biol.Scheik. Onderz., 1959, 55-64, (Du.e.), figs.4,tabs. 5,bibl.4.

1-2 p.p.m. of chlorpropham applied before, or just after, onion emergence was found to cause stunting and a marked decrease in root and shoot weight. Chlorpropham caused contact chlorosis of seedlings grown in the dark, but not of those grown in the light. Granular and emulsifiable chlorpropham had the same effect. - From Author's Summary. - L.K. [190(492)]

253. SCHMIDT, M. Pflanzenschutz im Gemüsebau. [Plant protection in vegetable crops.] Dtsch.Bauernverlag,Berlin, 1958, pp.320, DM 12, figs.,bibl.368.

Includes a section on weed control. - L.K.

254. OTOSSON, L. Kemisk ogräsbesprutning i ärter: Olika sorter har olika känslighet. [Chemical weed-spraying in peas: different varieties show different susceptibility.] Landtmannen, 1959, 70,405-6.

In Swedish tests of weed killers of the butylphenol type, little difference in resistance was found among commercial pea varieties, but some of the newer varieties notably Serpette ameliore [Improved Pruning-

knife], were more susceptible, apparently because their leaves were readily wetted. - Plant Breed.Abstr., 29,(4),4669.

255. ELLIOTT, J.G. (Dep.Agric.,Univ. Oxford,England). The use of simazine for weed control in field beans. [Mimeo.Rep., 1959, D.95,pp.5.

The following information was derived from answers to a questionnaire sent to 20 users of simazine who applied it (pre-em.) in various varieties of field beans during 1959:- at 1 # only 2 cases of some permanent injury were reported, and at 2 # some permanent injury or yield reduction in 6 out of 12 cases; 4 # was only used twice and was injurious both times. Greater depth of sowing was found to reduce toxicity and mixing into the soil to increase it. In 1 trial lima beans were not injured by 1 # but 2 # killed 5%; dwarf beans suffered 80% mortality from 2 # and 5% from 1 #; stick beans (Blue Lake) suffered some scorching from 1 and 2 # and runner beans severe scorching from 0.5 #.

In at least 1 trial complete control of Stellaria media and Spergula arvensis was obtained with 1 #, of Sinapis arvensis by 1.5 # in split doses with a 1-day interval between treatments, and excellent control of Chenopodium album by 1-1.5 #. Senecio vulgaris was controlled by rates over 0.6 #, volunteer barley by 1-2 #, and Polygonum aviculare and Matricaria spp. by 1.5 #. 2 # gave only partial control of Galium aparine, Avena fatua, and Solanum nigrum. The effect on Alopecurus myosuroides and on P. persicaria at 1 # and on P. convolvulus at 1.5-3 # was variable. Equisetum arvense and Rubus sp. were not controlled by 3 #. - D.M.L.S. [D.95.]

256. GREAT BRITAIN. Rep.Luddington exp. hort.Sta.,1958,1959,pp.99.

p.18. Strawberry herbicide trials. MCPES and 2,4-DES, both at 5 # in ca. 20 gal water, applied 3 times to 2 year old Royal Sovereign on 12th May, 13th June and 3rd September resulted in yields and plant measurements not significantly different from those of the weeded control. Weed species were:Stellaria media, Capsella bursa-pastoris, Senecio vulgaris, Urtica urens, Veronica persica, V. hederifolia and Chenopodium album. Both treatments gave effective weed control with MCPES slightly superior.

Fenuron 0.25, 0.5 and 1 # in 20 gal water applied to 1 year old Royal Sovereign on 1st May (about 7 weeks before picking) reduced yield and plant size at all rates and drastically at 1 #. The visual effects were growth suppression and marginal yellowing of the leaves. Symptoms of iron deficiency which became widespread as the season advanced were more pronounced on plots which received autumn applications (on September 3rd) of fenuron 0.5 and 1 # than on the spring-treated plots, the controls or the plots receiving 0.25 # in September. The possibility of some interaction between the effects of iron deficiency and fenuron is suggested. In general fenuron 0.5 and 1 # gave effective weed control both in spring and autumn (weeds present were as in the previous trial + Fumaria officinalis); though F. officinalis and the 2 Veronica spp. appeared somewhat resistant and Cirsium arvense regeneration was not checked; 0.25 # gave excellent control of C. bursa-pastoris but was otherwise less effective. Probably because of soil disturbance, the spring applications did not control weeds throughout the season.

p.45. Spring cabbage. CIPC 0.75, 1 and 1.5 # applied to spring cabbage in October 1 week after planting caused significant yield reductions at the 2 higher rates and a non-significant reduction at the lowest.

p.46. Broad beans. Dinoseb (amine) 4 # pre-em. and 1 and 2 # post-em. at the 3-4 leaf stage had no significant effect on yield or haulm weight of Bunyard's Exhibition Longpod beans compared with the weeded controls but the 2 # post-em. treatment appeared to check growth. - D.M.L.S. [O.W.]

257. LONG, J.A. and HOLT, E.C. (Agric. Exp.Sta.,Texas,U.S.A.) Controlling Dallisgrass in Bermudagrass turf. Tex.agric. Progr., 1959, 5,(2),13-14, figs.3,tabs.1.

During experiments from 1956-58, disodium methylarsonate was applied at 2.7, 5.4, 8.1 and 10.9 # to determine the best rate for dallisgrass [Paspalum dilatatum] control; each rate was applied in 86, 172, 258 and 334 gal of water. Over a period of 3 years, 10.9 # gave 95, 91 and 100% control, and 8.1 # gave 84, 60 and 98% control; the 2 lower rates gave very poor control and were discarded. 10.9 # in 86, 172 and 258 gal water gave 73, 74 and 76% control respectively. Addition of a wetting agent to disodium methylarsonate improved its effectiveness.

A table lists the following chemical sprays, claiming them to be suitable for controlling dallisgrass in Bermuda grass [Cynodon dactylon] turf:- 1 pint disodium

methylarsonate liquid formulation 20.5% a.i., 10-14 oz disodium methylarsonate soluble or wettable powders 50-98% a.i. and 10-14 oz amine methylarsonate liquid formulation 16% a.i., each applied in 2-4 gal of water to treat 1000 ft^2.
Herbicides should be applied when the temperature is above 70° F.
Infested lawn areas should be mowed 3 to 4 times before treatment, and afterwards the area should not be mowed or watered for 48 hours. Both disodium methylarsonate and amine methylarsonate will cause some discolouration of Bermuda grass turf, but it usually disappears in 1 to 2 weeks.
Neither of these chemicals should be used as broadcast applications in St. Augustine grass [Stenotaphrumsecundatum] lawns as they are toxic to this species. - J.W.B.
[125(76.4)]

258. UNITED STATES. Test herbicide use with nursery stock. Iowa Fm Sci., 1959, 14,(5),375, figs.2.
Note on pot tests by J.P. Mahlstede with redbud, honeysuckle, crabapple and Forsythia in which wheat and lima beans were used to simulate weeds. CDAA 8 # and 2,4-DES 8 # both killed wheat and 50% of beans without harming ornamentals. Simazine 3 # gave complete control but damaged the foliage of the ornamentals. The severity of these symptoms was lessened by application of fertiliser. - H.A.R. [NVRS]

259. PORTER, L.A. (Hort.Res.Sta.,Levin, N.Z.) Weed control in berry fruits. Proc. 12th N.Z. Weed Control Conf., 1959, 106-111, tabs.1.
A tentative programme, based on experimental results is suggested for the control of annual weeds in strawberries (var. Talisman).
(1) Dinoseb 3 # or dinoseb/dinosam 2 # + diesel 20 gal pre-planting. (2) Chlorpropham 2 #, or 4 # with plants protected, TCA 10 # 90%, at planting.(3)chlorpropham(as in 2) or 2,4-DB 1.25 # with plants established. (4) 2,4-DES 6-8 # immediately pre-mulching and post-harvest. (5) Dinoseb 3 # or chlorpropham 4 # alone or combined during dormancy. Chemicals did not completely eliminate hand hoeing.
Two winter applications of amitrol 6 # or dalapon 6 # gave temporary control of Agropyron repens in raspberry canes (var. Lloyd George and Taylor). Amitrol caused yield reduction in the Lloyd George variety. Chemical soil preparation using MeBr and plastic sheet mulching for strawberries is being investigated and also dinoseb/dinosam + diesel oil, chlorpropham and dalapon for weed control at the base of stools in raspberries. - M.E.L. [O.W.]

260. ROBINSON, D.W. (Hort.Cent.,Loughgall, Co.Armagh,Northern Ireland). The use of dalapon in fruit crops. Mon.Rep.Minist.Agric. N.Ire., 1959, 34,(7),206-8.
The susceptibility of blackcurrants, apples, gooseberries, raspberries and strawberries to dalapon is discussed and recommendations given as to rates and times of application for grass control in these crops. In strawberries it is only advised pre-planting. - D.M.L.S.
[O.RE.]

261. FY, C., TISSEAU, M., OURY,B. and AHMADA, F. (Inst.francais de recherch.fruitieres outre-mer,Paris,France). La culture de l'ananas en Guinee, manuel du planteur. [Pineapple culture in Guinea: a handbook for planters.] Inst.franc.rech.fruit.outre-mer, 1957, pp.331, (F.), figs.147,tabs.42.
Includes information on weed control. - From Bull.agric.Congo belge, 50,(5),1443. - D.M.L.S.

262. AUSTRALIA. Arsenic weedkillers are dangerous. Agric.Gaz.N.S.W., 1959, 70,11, 597.
Includes the information that arsenic pentoxide is still recommended for use on banana plantations. - J.W.B. [O.W.]

263. SIMMONDS, N.W. (I.C.T.A.,Trinidad). Bananas. Longmans, 1959, pp.466, 45/-, figs., tabs.,bibl.
p.164-9. Cultivation and weed control. Weed control by cutlassing, mulching, the use of cover crops, herbicides and by controlled weed growth and the disadvantages of cultivations are discussed. A list of cover plants is included. The author considers that only grass weeds are of importance and that their control by weedkillers or cutting while allowing broad leaved weeds (particularly of the family Commelinaceae) to grow, is probably the most promising method of cultivation. - L.K.
[O.RE.]

264. WRIGHT, J.O. (Pamol Ltd.,Res.Dep., Nigeria). A note on pruning of bananas with 2,4-dichlorophenoxyacetic acid. Trop.Agric. Trin., 1959, 36,(4),285.
A method found successful is to treat unwanted suckers (which must be sufficiently developed) with 5 ml of a 2% 2,4-D solution applied from a plastic wash-bottle into the small cavity formed by the base of the petiole or into the centre of the rolled-up spear. Where correctly applied no damage was seen on the parent stem

or untreated suckers on 600 mats treated every 3 months for 2.5 years. In a replicated experiment over the period, yield of stems and hands was increased though not significantly compared with normally-pruned plots. There was an indication that where bananas were not earthed up wind damage was reduced. - D.M.L.S. [O.RE.]

265. MEURMAN, O. Vielä kin Kloraateista rikkaruohomyrkkyinä. [Chlorates as herbicides.] Puutarha, 1959, 62,213.
A potassium chlorate preparation used for 15 years in orchards without damage to trees. - Hort.Abstr., 29,3542k.

266. PEARCE, G.A. and HARDISTY, S.E. (Dep. Agric.,Perth,Western Australia). Weed research. 5. Weed control in orchards. J.Agric.W.Aust., 1959, 8,(5),613-7, figs.3, tabs.2.
Contains general information and recommendations for dalapon, monuron, amitrol and PCP (trade names and distributors are listed), also recommendations for certain groups of weeds and some individuals. - D.M.L.S. [O.RE.]

267. SULLIVAN, D.T. and ENZIE, J.V. (Agric. Exp.Sta.,State Univ.,New Mexico,U.S.A.) Cultural management methods in a young apple orchard under irrigation. Res.Rep.N.Mex. agric.Exp.Sta., 1959, 19,pp.12, figs.5, tabs.4.
Three systems of orchard management under irrigation were compared on 3 year old apple varieties Jonared, Richared and Blairtayman - permanent sod of alta fescue (1), sod mulch (2), and no tillage but spraying with oil + PCP (3). After 8 years treatment (2) produced larger trees than either (1) or (3). Total fruit yield was highest on the sprayed plots but as trees receiving treatment (2) were the largest the position might change in time. (1) produced fruit with more red colouring, especially variety Richared, indicating water and/or nitrogen deficiency. There was no significant difference in fruit size as a result of treatments. Calculations showed that, in 1957, (1) received 67.2 acre-inches in 12 irrigations, and that with 7 irrigations each, (2) and (3) received 42 and 32.2 acre-inches respectively. In spite of (1) receiving nearly twice the amount of water a deficiency was caused by competition from the grass. - J.W.B. [15(78.9)]

268. UNITED STATES. Wash.Res.Progr. Agron., 1959, 3,pp.8.
p.7. Pruning weights and fruit yield of Concord grape vines sprayed in 1955 with 2,4-D 100 p.p.m. are still below those of the unsprayed vines.
SMDC, diuron + HCA [hexachloroacetone] or + amitrol, oil + HCA, amitrol and TBA were applied in spring for the control of annual weeds around newly established apple trees. At the end of the season, the largest trunk measurements were those on the cultivated controls and the smallest on those treated with TBA, these trees being seriously injured. Diuron + HCA in oil or + amitrol in water was effective as a foliage spray.
p.8. 2,4-D + 2,4,5-T, amitrol, 2,3,6-TBA and MCPA were applied to sheep sorrel [Rumex acetosella] in established Merion bluegrass [Poa spp.]; 2,3,6-TBA showed promise and amitrol was the only chemical to severely injure the bluegrass.
2,4-D, MCPA, amitrol and 2,4-D + 2,4,5-T gave poor results when used on blue flowering lettuce [Lactuca pulchella?], but 2,3,6-TBA seemed to be superior.
Ploughing after treating quackgrass with dalapon or TCA improved their effectiveness; amitrol was relatively ineffective, but TCA + dinoseb gave good results.
2,3,6-TBA (sodium) at 2 # applied in early summer gave excellent control of dalmatian toadflax (Linaria sp.). 2,3,6-TBA + 2,4-D was superior to either herbicide alone, but 2,4-D alone gave no control. - J.W.B. [46(79.7)]

269. RAO, M.S.S., PRASAD, R.B. and KHANNA, K.L. Some preliminary observations on the effect of maleic hydrazide on sugarcane. Indian J.Sugarcane Res., 1959, 3, 68-71, bibl.25.
Soil applications of MH at rates of 73.5, 147 and 294 p.p.m. active MH were made to Co. 513 when 3 month old, and foliar sprays at 1.2 and 2.4 g/clump were applied to B.O.17 when 5 months old. Tillering was increased by soil applications but reduced by sprays; flowering was prevented by the former and greatly enhanced by the latter. Yields were highest at the 73.5 p.p.m. soil dosage, the control being second; sprays at both rates depressed yields appreciably. The results for % extraction and juice purity were similar. - Hort.Abstr., 29, 4101.

270. ROSSETTI, V. and BITANCOURT, A.A. Acao deformante do 2,4-D sobre folhas de cafeeiro. [Deforming action of 2,4-D on coffee leaves.] Biologico, 1959, 25,25-7, figs.,bibl.2.
When a fungicidal spray was applied to coffee seedlings, using apparatus not properly cleansed after spraying 2,4-D on to weeds, 40% of the seedlings developed their youngest (3rd or 4th) pair of leaves with a leathery texture and long,narrow shape. In many of the affected seedlings the terminal bud became atrophied or withered. Of the 5 seedlings kept under observation, 4 produced new normal shoots 2 months after transplanting, 3 of them sending out lateral shoots at cotyledonary level, and the other growing from the terminal bud. - Hort.Abstr., 29,4054.

271. URQUHART, B. Weed control. Scot. Forestry, 1959, 13,(2),68-71.
The author discusses mechanical, chemical and animal aids to weed control in plantations in general terms, and weed suppression by shading in more detail. Norway spruce [Picea abies] which will tolerate shade for several years and then respond to light, may be grown under a canopy of scrub which is later cut or ringed. Black polythene has recently been tested for suppressing weeds in 2 year old Norway spruce transplants. While weeding time was halved on the plots covered with polythene the overall time (including cutting and laying the sheet) was slightly more on these plots; however, it is hoped that this can be improved by speeding up the cutting and laying time. The results suggested that the polythene could be used for 2 or 3 consecutive seasons. - J.W.B. [O.F.]

Noted

272N. CURTIS, O.F. (Agric.Exp.Sta.,Cornell Univ.,Geneva,N.Y.,U.S.A.) Experiments and experiences in the control of grass and weeds. Proc.N.Y.State hort.Soc., 1959, 104,129-33, figs.1,tabs.1.
With reference to the use of dalapon and Karmex under apple and peach trees. - L.K. [124(74.7)]

273N. GREAT BRITAIN. A note on weed control in bananas. Pest.Abstr.News Summ., (C), 1959, 5,(4),153-4, bibl.8.
Compiled from references cited in Weed Abstracts. - L.K. [O.W.]

274N. GREAT BRITAIN. Care will be needed with weedkillers. Grower, 1959, 52,(18),912.
With reference to the use of propham, chlorpropham and fenuron in strawberries. - L.K. [O.W.]

275N. PETERSEN, H.I. (Statens Ukrudtsforsøg,Skovlunde,Denmark). Kemisk ukrudtsbekaempelse i planteskoler. [Chemical control of weeds in forest nurseries.] Dansk.Skovforen.Tidsskr., 1959, 44,(3),231-8, (Dan.), figs.4,tabs.3.
Mainly with reference to the use of allyl alcohol and oils. - L.K. [80(489)]

276N. ROGERS, I.S. (Dep.Agric.,Gawler Place, Adelaide,S.Aust.) Using chemicals against weeds in vegetables. J.Dep.Agric.S.Aust., 1959, 63,(1),31-5, tabs. [O.W.]

BIOLOGY OF WEEDS AND POISONING BY WEEDS

See also 376.

277. VASILEV, D.S. [Some data on the biology of Ambrosia artemisiaefolia L.] Bot.Zh.S.S.S.R., 1959, 44,(6),843-6, (Russ.), tabs. 1,bibl.8.
A brief discussion on the distribution and phenology of the weed based on 5 years' observations. - L.K. [O.R.]

278. YOUNGNER, V.B. (Univ.Calif.,Los Angeles,U.S.A.) Growth of U-3 bermudagrass under various day and night temperatures and light intensities. Agron.J., 1959, 51,(9), 557-9, figs.1,tabs.2.
Cynodon dactylon. - L.K. [O.RE.]

279. GORENFLOT, R. (S.P.C.N.,Orsay, Seine-O., France). Polyploidie experimentale chez Plantago coronopus L. Allotriploidie. [Experimental polyploidy in Plantago coronopus L. Allotriploidy.] C.R.Acad.Sci.Paris, 1959, 249, (16),1560-2, (F.), figs.18,tabs.1,bibl.1.
Crossing P. coronopus ssp. commutata (2n = 20) with P. coronupus spp. eucoronopus (2n = 10) gives triploid individuals with vegetative and reproductive structures midway between the parents. Unlike autopolyploidy, alltriploidy (like allotetraploidy) does not affect cell size. - Author's summary. [O.R.]

280. GORENFLOT, R. (S.P.C.N., Orsay, S-et-O, France). Polyploidie experimentale chez Plantago coronopus L. Autotetraploidie. [Experimental polyploidy in Plantago coronopus L. Autotetraploidy.] C.R.Acad.Sci. Paris, 1959, 249,(14),1251-3, (F.), figs.20, bibl.1.
Experimental autotetraploidy causes an increase in the size of mature cells and of floral parts, but it does not result in gigantism. It differs from natural allotetraploidy which results in a diminution in the size of vegetative and reproductive parts without affecting cell size. - Author's Summary. [O.R.]

281. RAI, U.K. (Bose Institute, Calcutta, India). A 40-chromosome variant in Solanum nigrum L. Nature, Lond., 1959, 184,(4698), 1587, figs.1, bibl.4. [O.W.]

282. CIFERRI, R. and PIGNATTI, S. La facile identificazione delle erbe infestanti d'Italia. [Easy identification of Italian weeds.] Manuali di Fitoiatria, Soc.it.fit., 1960, 4, pp.112, (It.), figs.372.
This flora of Italian weeds gives a key for all the most common weeds, illustrations of 372, and the principal members of weed communities in arable crops, weeded crops, ricefields, permanent pastures, and alpine pastures. - D.M.L.S. [W3(45)]

283. GOTTLIEB, J.E. (West.Univ., San Diego, 6, Calif., U.S.A.) Development of the bracken fern, Pteridium aquilinum (L.) Kuhn. - II. Stelar ontogeny of the sporeling. Phytomorphology, 1959, 9,(1),91-105, figs.18, bibl.33. [O.BO.]

284. * NEW, J.K. A population study of Spergula arvensis. Ph.D.Thesis, London Univ., (Univ.Coll.), (n.d.)

285. PROTOPOPOV, V.V. [Microclimatic conditions in pure stands of Chamaenerion angustifolium (L.) Scop.] Bot.Zh.S.S.S.R., 1959, 44,(8),1143-8, (Russ.), tabs.5. [O.R.]

286. GRANT, W.F. (Macdonald Coll., P.O., Quebec, Canada). Cytogenetic studies in Amaranthus. II. Natural interspecific hybridization between A. dubius and A. spinosus. Canad.J.Bot., 1959, 37,(5),1063-70, figs.11, tabs.3, bibl.20. [O.R.]

287. HÄGANSSON, S. (Kungl.Landbruks-högskola, Uppsala, Sweden). Ogräslökproblemet i sydöstra Sverige. En preleminär rapport. [The problem of wild onions in southeast Sweden. A preliminary report.] Växtodling, 1959, 10,68-86, (Sw.e.), figs.5, tabs.5, bibl.32.
The distribution of the various spp. of Allium in Sweden is outlined. In arable land A. vineale is much the most important sp. but A. scorodoprasum and A. oleraceum do also occur. In grassland the above spp. are all common and in certain localities A. schoenoprasum and A. ursinum are also found. The development of A. vineale and its control are dealt with in some detail (cf. Weed Abstr., 6,630). A. oleraceum, A. scorodoprasum and A. schoenoprasum have a similar rhythm of development to A. vineale; A. oleraceum is somewhat more resistant to 2,4-D and the other 2 spp. somewhat less so. - L.K. [O.W.]

288. HARDIN, J.W. (State Coll., Raleigh, N.Carolina, U.S.A.) Some notes on weeds of North Carolina. Castanea, 1959, 24, (1),20-23.
The following weeds which are claimed to be troublesome in North Carolina are described briefly: Baccharis halimifolia, Alternanthera philoxeroides, Scleranthus annuus, Richardia scabra, Erodium cicutarium, Stachys sieboldii, Ambrosia bidentata, Cenchrus echinatus, and Calepina irregularis. J.W.B. [42(75.6)]

289. HEJNY, S. [Iva xanthifolia and Czechoslovakia.] Acta fac.rev.nat.Univ. Comen.Bot., 1958, 2,323-42.
Mainly with reference to its distribution in the U.S.A., Europe and the U.S.S.R. Two morphologically different forms are known. - From Z.PflKrank., 66,612. - L.K.

290. HOLMGREN, A.H. (State Univ., Utah, U.S.A.) Weeds of Utah. Spec.Rep.Utah agric.Exp.Sta., 1958, 12, pp.85, figs.
Approximately 170 weeds, belonging to 37 families, are described and illustrated. Brief mention is made of a further 50 spp. There is also a glossary of the botanical terms used in the descriptions. - J.W.B. [W1(79.2)]

291. HULME, B.A. Studies on some British species of Atriplex L. Ph.D.Thesis, Univ.

Edinburgh, 1957, pp.105, figs.50,tabs.53, bibl.50.

An investigation, involving morphological and ecological studies, and cultivation experiments, into the taxonomy of 4 species of Atriplex listed in the Flora of the British Isles, showed A. patula, A. littoralis and A. hastata to be 3 distinct species, and A. glabriuscula to be included within A. hastata. The cultivation experiments, which included experiments on germination, general morphological characters, pollen size and fertility, the breeding system, cytology and hybridisation, showed that most of the characters used in the classification of these species have a genetic basis, but they can also be modified by environmental factors. During 1 experiment plants were accidently sprayed with a trace of Dicotox [2,4-D]; this caused immediate stem twisting and leaf drooping; in fruit, some of the affected plants developed fused bracteoles which contained oblong seeds with extended radicles; seed from affected plants in some cases produced abnormal seedlings in which the first or second pair of leaves were fused in varying degrees, and the shoot appeared blind.

Appendices are included on the germination of weed seeds, the measurment of leaf shape, and a study of a foreshore community, all with particular reference to Atriplex spp. With reference to the germination studies, workers in Great Britain and Australia have shown that: (1) seed in bracteoles germinatesmuch more slowly than loose seed, (found to be correlated with the concentration of sodium chloride in the bracteoles); (2) germination is improved by scarification, or by subjecting seed to a low temperature for 1-2 weeks; (3) germination failure is not due to embryo immaturity; (4) brown seeds germinate more readily than black, the only anatomical difference being in the testa; and (5) a substance extracted from the bracteoles of seed coat had an adverse effect on germination and growth of excised embryos. Seeds have been known to germinate after being dormant in the soil for 3 years and 1 report claims that seed germinated after being dormant for 100 years. - J.W.B.

292. KOLMAKOV, P. [The biological characteristics of wild oats and its control in Siberia.] Selsk.Sibiri, 1958, (10), 32-41, (Russ.)

Gives the results of 20 years' investigation into the causes of the intensive reproduction and widespread distribution of wild oats [Avena fatua] in western Siberia with reference to the biological peculiarities of the weed. - Ref.Zh.Biol., 1959, 84023.

293. KOVACEVIC, J. (Zavod za Agroekologiju, Zagreb,Yugoslavia). Pregled agroecholoskih svojstava korovnih zajednica oblasti Like. [A survey of the agroecological properties of the weed communities of the Like region.] Zemljiste i biljka, 1958, 8,(1/3),115-22, (g.), bibl.10. [60(497.1)]

294. POPESCU, P.C. and BUJOREAN, G. Picris echioides in flora Banatului si Crisanei. [Picris echioides in the Banatului and Crisanei flora.] Studii si cercetari stiint.Acad.RPR Ser.stiinte agric., 1957, 4,(1/2), 167-71, (Rumanian.russ.f.)

Picris echioides has been recorded in Rumania for the first time. The need to eradicate this quarantined weed is discussed. - Ref.Zh.Biol., 1959, 75696.

295. QOSJA, X. Barnat e keqia te qarkut te Korces. [Weeds of the Korces region.] Bull. Univ.Shteter.Tiranes.Ser.ShKenc.natyr., 1958, 12,(1),21-48, (Albanian.russ.f.)

Includes information on control. - L.K.

296. ZHUKOV, I.N. [The regeneration of the subterranean organs of field bindweed.] Bull. Nauchno-Tekh.Inf.Sibirsk.Inst.Selsk., 1958, (3),27-32, (Russ.)

All roots and suckers of field bindweed [Convolvulus arvensis] below the depth of cultivation were found to be capable of regeneration regardless of the depth or type of cultivation. Cut-off parts of suckers died; cut-off parts of roots partially re-rooted but did not form horizontal reproductive roots [rhizomes?]. - From Ref.Zh.Biol., 1958, 79588.- L.K.

297. MAJUMDAR, G.P. and PAL, P.K. (Dep.Agric., Univ.,Calcutta 19,India). Inter-petiolar stipules of Galium mollugo L. Proc.Indian Acad.Sci., 1958, 48,(5),211-22, figs.19, tabs.1,bibl.17. [O.R.]

298. MALL, L.P. (Univ.Sangar,India). Contribution to the autecology of Cassia tora Linn. and C. obtusifolia Linn. J.Univ.Sangar, 1957, 6,35-54.

It is suggested that, morphologically, these 2 species are distinct. Both the species need well aerated soil and water-logging is harmful to them. The geographical distribution is

over-lapping. In the case of both species the germination percentage is high. Seeds show poor germination in the first year of dry storage, however, in the second year, they show maximum germination and after 4 or 5 years they start losing viability. Both species grow in thick colonies due to the absence of any proper mechanism for the dispersal of their seeds. C. obtusifolia shows a larger amount of calcium content than C. tora. There does not seem to be any ecological distinction between the 2 species. - Biol.Abstr., 34, (4),9474.

299. PHATAK, V.G. and OZA, G.M. (Dep.Bot., M.S.Univ.,Baroda,India). Studies on the weeds of Gujarat. I. Observations on the weeds of the M.S.University Campus, Baroda. J.M.S.Univ.Baroda, 1957, 6,(2),93-111.
Regarding their habits and habitats, relative scarcity and abundance, some ecological associations and phenology. 131 of the species are in the Herbarium of the Botany Department of the M.S. University of Baroda. - From Biol.Abstr., 34,(4),9480. - D.M.L.S.

300. REHDER, H. Uber die Beziehung der Ackerunkräuter zur Bodenart sowie zum Säuregrad, Phosphorsäure- und Kaligehalt des Bodens im Raum um Hamburg. [The relationship between field weeds, soil type, acidity and phosphorous and potassium content of the soil in the Hamburg district.] Abhandlungen u.Verhandlungen Naturwiss. Vereins 1958, 1959, 3, 55-85, (G.), figs. 19,tabs.3,bibl.26.
Numerous surveys showed that the weed communities in the Hamburg district are primarily conditioned by the soil type. Some species also showed connections with the soil reaction and the phosphorous and potassium content of the soil. In diluvial and alluvial areas the soil reaction affected the distribution of many weeds in different ways - probably in connection with the different competitive conditions. The relationships of phosphorous and potassium could not usually be clearly separated from the other environmental conditions. The results obtained are generally in agreement with those of other authors. - Author's Summary.
[202(43)]

301. * UBRIZSY, G. (Res.Inst.Plant Prot., Budapest,Hungary). Conologiai kutatasok agrarteruletek gyomtarsulasain, Kulonos tekintettel a vegyszeres gyomirtas floraatalalakito hatasara. [Phytocoenological studies of weed associations in cultivated areas, with special reference to the effects of chemical weeding.] Magyar Tudomanyos Akad.Biol., 1958, 65-78, (Hungarian), figs.4,tabs.2. [3(439)]

302. WOODS, F.W., HARRIS, H.C. and CALDWELL, R.E. (Agric.Coll.,Gainesville, Florida,U.S.A.) Monthly variations of carbohydrates and nitrogen in roots of sandhill oaks and wiregrass. Ecology, 1959, 40,(2),292-5, figs.4,tabs.3,bibl.8.
In a 3-year study in the sandhills of western Florida, carbohydrate food reserves in the roots of Quercus laevis and Q. incana were lowest between late April and early May, when the new leaves were reaching full size. The major nitrogen depletion period corresponded generally with that of carbohydrates but lasted until about the first week of June. Roots of Aristida stricta were at their lowest level of carbohydrates in mid-July and of nitrogen in September; fluctuations of both carbohydrates and nitrogen were much less pronounced than in the oaks. Cutting the tops from oaks caused the carbohydrates of the roots to remain low for at least 12 weeks. From this study, late April or May would appear to be the best time to start eradication of the oaks and would probably also be satisfactory for A. stricta. - From Authors' Summary (modified). - D.M.L.S. [O.R.]

303. PADMANABHAN, D. (Dep.Bot.,Presidency Coll.,Madras,India). The development of endosperm in Lantana camara L. Proc.Indian Acad.Sci., 1959, 49,(6),420-7, figs.12, bibl.6. [O.R.]

304. DENMARK. Ukrudtsfrøs spirevne efter opbevaring i ensilage. [The viability of weed seeds after storing in silage.] Medd. Stat.Forsøgsvirksomhed i Plantekultur, 1960, 633,pp.2, (Dan.), tabs.1.
In 2 series of experiments in 1955-6 and 1957-8 seeds of 14 weed species were stored for 2 months in linen bags 1 m deep in silage made from sugar beet tops or waste. The % of viable seed after storage in silage from tops and waste respectively was (germination of seed stored separately = 100%): agergåsurt 1,1; agersennep [Sinapis arvensis] 0,0; alm.kvik [Agropyron repens] 0,0; burresnerre [Galium aparine] 1,0; flyvehavre [Avena fatua] 0,0; gul okseøje [Chrysanthemum segetum] 0,0; hvidmelet gåsefod [Chenopodium album] 15,43; kornblomst [Centaurea cyanus]

0,0; kruset skraeppe [Rumex crispus] 0,0; Lugtløs kamille [Matricaria inodora] 8,2; rødknæ [Rumex acetosella] 0,0; snerlepileurt [Polygonum convolvulus] 0,0; Sort natskygge [Solanum nigrum] with black berries 15 and 23, with green berries 5 and 16; vild spergel [Spergula arvensis] 0,0. Both sets of experiments gave similar results. - L.K. [91(489)]

305. HARRIS, G.S. (Grasslands Div.,Dep. Sci.& Ind.Res.,Palmerston North,N.Z.) The significance of buried weed seeds in agriculture. Proc.12th N.Z.Weed Control Conf., 1959, 85-92, tabs.3,bibl.5.

Soil samplings to determine the number of viable weed seeds present and their distribution with depth, in pasture and cultivated areas in North Island, are described. Species studied were: Lolium spp., Poa spp., Trifolium pratense, T. repens, T. dubium, Trifolium spp., Polygonum spp., Rumex spp., Coronopus didymus, Amaranthus retroflexus, Capsella bursa-pastoris, Juncus bufonius, Spergula arvensis, Stellaria media, Plantago major, Silene gallica, Crepis capillaris, Solanum nigrum, Veronica tournefortii, Sonchus asper, Stachys arvensis, Veronica arvensis, Bellis perennis, Cerastium glomeratum and Chenopodium album.

Viable seeds of Hordeum murinum were found on, or within 0.5 in., of the soil surface and did not survive longer than one winter. In tests run over 48 weeks the maximum % germination of fresh seeds in sterilised soil was: H. murinum 89% after 2 weeks, Bromus mollis 90% after 8 weeks; Vulpia dertonensis 54% after 20 weeks, Paspalum dilatatum 15% after 40 weeks, and Digitaria sanguinalis 49% after 44 weeks. - M.E.L. [O.W.]

306. SIFTON, H.B. (Dep.Bot.,Univ.,Toronto, Canada). The germination of light-sensitive seeds of Typha latifolia L. Canad.J.Bot., 1959, 37,(4),719-30, figs.5,tabs.8,bibl.37.

Studies revealed, inter alia, that the optimum temperature for germination of these seeds is about 30°C. Above, this, the germination % decreases. At temperatures below 25°C both % and rapidity of germination decrease rapidly as the temperature is lowered. - D.M.L.S. [O.R.]

307. SJÖSTEDT, S. (Kungl.Lantbrukshögskola, Uppsala,Sweden). Snärjmårans, Galium aparine L., groningsbiologi. [The germination biology of cleavers, Galium aparine L.] Växtodling, 1959, 10, 87-105, (Sw.e.), figs. 14,tabs.10,bibl.16.

In each of 4 experiments a higher proportion of seeds germinated in total darkness than in light (intensity varying from ca. 1-80% of daylight); however, initial germination (in the 2 cases measured) was slower in total darkness than with some light. When germinated on soil in total darkness, germination of newly harvested and 1 year old seed reached 52-82%, at ca. 20% of daylight it reached 25-50% and at 80% of daylight only 1%. When germinated on filter paper, germination was 6% in total darkness and 0-1% under all other light intensities. 5-6 year old seed failed to germinate under any of the light intensities tested. In 2 experiments where seeds were germinated in soils of varying moisture (30-100% of capacity), % germination of 1 year old seed in the 2 experiments, at 30% capacity was 1 and 22, at 40% 13 and 38, at 70-80% 22 and 40 (maximum) and at 100% 25 and 38; 5-6 year old seed gave a total of only 0.2% germination. In constant or varying temperatures from 10-30°C no germination occurred at 30°C (this temperature appeared to induce dormancy) and maximum germination at a varying temperature of 10-17.7° (74-91% germination). New seed germinated less at all temperatures than year old seed; at 20°C 1 year old seed germinated 36%, while new seed germinated only 1-4%. After 3 weeks, germination of seed on filter paper when moistened with water was 4%, with potassium nitrate 23% and with soil extract 32%. - L.K. [O.W.]

308. WELDON, L.W., BOHMONT, D.W. and ALLEY, H.P. (Univ.,Laramie,Wyoming,U.S.A.) The interrelation of three environmental factors affecting germination of sagebrush seed. J.Range Mgmt, 1959, 12,(5),236-8, tabs.3,bibl.7.

Gives the results of experiments to determine the effect of light, temperature and available moisture on the germination of Artemisia tridentata. In the dark germination at 38°F and 70°F was 3.5 and 13.3%;in the light it was 16 and 35.2% respectively. Where osmotic solutions of 0, 4 and 8 atmospheres were used to limit the amount of moisture available, germination at 38°F (average of light and dark) was 14.2, 9.2 and 5.8% respectively and at 70°F 38.5, 20.5 and 13.8% and germination in the dark (average of both temperatures) was 12.8, 8.5 and 4.0% respectively and in the light 40.6, 21.2 and 15.5%. - L.K. [O.W.]

309. WIBERG, H. (Kungl.Lantbrukshögskola, Uppsala,Sweden). Flyghavrekörnornas livsduglighet efter kompostering. [The viability of wild oat seed after composting.] Växtodling, 1959, 10,54-7, (Sw.e.), tabs.5.

Where calcium cyanamide 5-10 kg/m^3 was added to a carefully made compost of peas and Avena fatua, the Avena seeds lost their viability in 2 years; in the absence of cyanamide at least 3 years seems to be necessary. - L.K. [O.W.]

310. PILGRIM, R.L.C. (Univ.,Christchurch, New Zealand). Some properties of the sting of the New Zealand nettle, Urtica ferox. Proc.roy.Soc.B., 1959, 151,(942),48-56, figs.4,bibl.6. [O.BO.]

311. GRAHAM, D.P. (Intermount.For.Range Exp.Sta.,Ogden,Utah,U.S.A.) Dwarf mistletoe survey in Kootenai National Forest. Res. Note Intermount.For.Range exp.Sta., 1959, 67,pp.5, tabs.3.
In a roadside survey, Arceuthobium spp. were found in 70% of all larch stands traversed, and infected lodgepole pine stands were found throughout the forest. No other trees appeared seriously affected. Its abundance in the different types of larch stands is analysed. - D.M.L.S. [O.F.]

312. GRAHAM, D.P. (Intermount.For.Range Exp.Sta.,Ogden,Utah,U.S.A.) Dwarf mistletoe survey in Coeur d'Aline National Forest. Res.Note Intermount.For.Range exp.Sta., 1959, 68,pp.5, tabs.3.
In a roadside survey, Arceuthobium spp. were found in 64% of larch stands traversed, heavy damage being present in about 60% of the infected stands. Its abundance in the different types of larch stands is analysed. Infections were also found in ponderosa pine, lodgepole pine and mountain hemlock; their locations are given. - D.M.L.S. [O.F.]

313. IZARD, C. Recherches biochimiques sur les graines de l'orobanche parasite du tabac. I. Variations des acides amines et des sucres. II. Obtention d'un pigment flavonique. [Biochemical studies on the seeds of broomrape parasitic on tobacco. I. Changes in amino acids and sugars. II. Isolation of flavonoid pigment.] Ann.Inst.Exp.Tabac. Bergerac, 1958, 3,(1),77-83, figs.,bibl.4.

314. SUTIC, D. [Orobanche ramosa L. on tomatoes in the environs of Titov Veles.] Zastita Bilja, 1953, 20,43-6, (Serbo-Croat.e.)
The author describes the mass occurrence of O. ramosa on tomatoes in the environs of Titov Meles in Macedonia. This species very often parasitises tobacco and hemp as well as tomatoes in Yugoslavia. The author studied the transmission of the parasite and gives some methods of control. - Z.PflKrankh., 66,422.

315. OHMAN, J.H. and STEWART, D.M. Effects of aqueous extracts of quackgrass rhizomes on the development of stem rust of wheat. [Abstract] Phytopathology, 1959, 49,(9),548. [O.BO.]

316. VASANTHARAJ, D.B. A note on the total stem parasite Cuscuta hyalina Roth. Madras agric.J., 1959, 46,(5),186-7.
Reports this less common species as parasitizing 12 common weeds, especially Tribulus terrestris L. - Biol.Abstr., 34, (4),11567.

317. OHMAN, J.H. and KOMMEDAHL, T. Comparison of toxic effects of extracts from various organs of 2 quackgrass clones on alfalfa. [Abstract] Phytopathology, 1959, 49,(9),548.
Agropyron repens.

318. WAGNON, K.A. (Univ.,Davis,Calif., U.S.A.) A study of bracken fern poisoning of cattle on a Californian forest range. J.Range Mgmt, 1959, 12,(5),249-55, figs.1, tabs.1,bibl.22.
A review of previous work is given and followed by a discussion, and a table summarizing tests, which were carried out from 1944 to 1946. After several cattle deaths had been reported in 1944, bracken (Pteridium aquilinum) was harvested from a moist site and sun-dried before feeding to a 2 year old heifer; she died with symptoms typical of those observed in cattle which had died on the range. In 1945, green fern fed to a 2 year old heifer gave negative results. In 1946, bracken collected from moist and dry sites, initial and second growth, early and mid-season growth from these sites and unfrosted and frosted fronds collected late in the season, all gave negative results when fed to 2 year old cattle. Since 1945, no further deaths had been reported up to 1957, although cattle have continued to eat large quantities of fern.
Red mimulus (Mimulus cardinalis) was suspected of being poisonous; however, 9 lb of sun-dried material was fed to an

8 month old steer over 4 days without causing ill effects. - J.W.B. [O.W.]

319. SCHOENTAL, R. Liver lesions in young rats suckled by mothers treated with the pyrrolizidine (Senecio) alkaloids, lasiocarpine and retrorsine. J.Path.Bact., 1959, 77, 485-95.
Attention is directed to the possibility that various liver disorders in childhood may be the result of poisoning by milk from cows consuming Senecio. - From Vet.Bull., Weybridge, 29,(9),2940. - D.M.L.S.

320. SCHAMPER, A. Die chronische Senecio Vergiftung im Rattenexperiment (Senecio vulgaris, S. jacobaea, S. paludosus) Ein Beitrag zur Histogenese der fütterungsbedingten Leberzirrhosen und Lebergeschwülste beim Tier. [Liver lesions in rats with chronic Senecio poisoning.] Inaug.Diss. Munich, 1959, pp.53.
In an experiment lasting 280 days, the hepatotoxic effect of dried and powdered S. vulgaris, S. jacobaea and S. paludosus was confirmed in 6 groups of rats fed these plants collected either before or after flowering. - From Vet.Bull.,Weybridge, 29,(4),1205. - D.M.L.S.

321. IBRAGIMOV, K.Z. and LEBEDEV, A.S. [Experimental poisoning of sheep with Trichodesma incanum.] Veterinariya,Moscow, 1958, 35,(10),81, (Russ.)
T. incanum seeds were included in the diet of 5 sheep at dosages of 0.05-0.4 g/kg body weight for up to 1.5 months without causing toxic symptoms. Three gave birth to healthy lambs. Two sheep fed 1-2 g/kg for 15-20 days were severely poisoned and died 25-45 days after feeding began. Clinical symptoms, blood picture, and P.M. findings are described. - Vet.Bull.,Weybridge, 29,(6),1906.

322. RHODESIA. The farming calendar. September-October. Rhod.agric.J., 1959, 56,(4),138-47.
p.140 and 144. Control of weeds and poisonous plants. The leaves of Dichapetalum cymosum are deadly poisonous to cattle if grazed in the spring (August to October) but appear to be harmless at other times, except where fire or frost has stimulated regrowth out of season. The plant is confined in the Federation to the Kalahari sand areas of Matabeleland where it occurs in woodland or at the edge of the vleis. Fencing off the affected areas is probably the best method of control. A mixture of 2,4,5-T (ester) 2 # with 2,4-D (butyl ester) 2 # in 100 gal water has proved successful but is expensive for large areas. Other plants poisonous to stock include Moraea schimperi which is most poisonous during September and October and is best controlled by fencing or digging out and Senecio latifolius which causes seneciosis in horses. The latter is susceptible to weedkillers but fencing and veld management with repeated mowing is probably more effective. Neither is readily eaten by stock. - D.M.L.S. [O.RE.]

323. HARKER, K.W. and GOURLAY, R.N. (Animal Health Res.Centre,Entebbe,Uganda). Stock poisoning attributed to the leaves of the shrub Bersama abyssinica. E.Afr.agric.J., 1959, 25,(2),63-5, figs.2,bibl.8.
Investigations following the deaths of 3 cows at Entebbe indicated that the leaves of B. abyssinica were the source of the toxic agent. Two rabbits and a calf were then fed B. abyssinica leaves and all 3 died. The calf was killed by 4 g of ground dried leaves suspended in water. It had refused the unground leaves when offered them. So far as is known, the species had not previously been incriminated in stock poisoning. The plant is described and illustrated. - D.M.L.S. [O.RE.]

324. GASPARE, V. and ANTONINO, C. Modificazioni del latte in capre alimentate con acetosella (Oxalis acetosella). [Changes in the milk of goats fed sorrel (O. acetosella).] Acta med.vet.Napoli, 1958, 4,443-8, (It.e.g.f.)
There were no significant changes in the composition of milk of 5 goats kept exclusively on sorrel for 5 weeks. There was a diminution in the yield which, in 1 animal, dropped to below half. - From Vet.Bull.,Weybridge, 29, (8),2646. - D.M.L.S.

325. GALLO, G.G. Accion toxica de Colliguaya integerrima sobre ovinos y caprinos de nuestra Patagonia. [Toxicity of Colliguaya integerrima for sheep and goats.] Rev.Vet. Milit.B.Aires, 1958, 6,75-85,122-3, (Spanish).
This plant, a member of the Euphorbiaceae, occurs in the west of Patagonia. The toxic principle was a saponin and the toxicity varied: sheep invariably died when fed the plant in the period November-April (during flowering and fruiting). The presence of gastro-intestinal parasites appeared to facilitate poisoning. Details of experimental poisoning are given. - From Vet.Bull.,Weybridge, 29,(8),2647. - D.M.L.S.

326. FAIRBAIRN, J.W. and CHALLEN, S.B. (Sch.Pharm.,Univ.London,England). The alkaloids of Hemlock (Conium maculatum L.). Distribution in relation to the development of the fruit. Biochem.J., 1959, 72,(4), 556-61, figs.2,tabs.2,bibl.15. [O.BO.]

327. HILL, K.R. and MARTIN, H.M. Hepatic veno-occlusive disease and megalocytosis in Senecio poisoning of horses. (Further investigations of "the walking disease" of Northwestern Nebraska). Brit.vet.J., 1958, 114,345-50.
Caused by feeding with S. riddellii. - From Vet.Bull.,Weybridge, 29,(5),1558 (modified). - D.M.L.S.

328. KINGSBURY, J.M. (Dep.Bot.,N.Y.State Coll.Agric.,Cornell Univ.,Ithaca,U.S.A.) Toxicity of Apocynum (Dogbane) to stock; a correction. The Cornell Vet., 1959, 285-7. [O.W.]

329. PHILIP, J.R., JACKSON, J.J. and SHONE, D.K. Sarcostemma viminale poisoning in sheep and cattle. J.S.Afr.vet.med.Ass., 1958, 29,319-20.
The toxicity of S. viminale from Enkeldoorn, Southern Rhodesia, was established by the death of a sheep within 6 hours of being dosed with 514 g of fresh ground-up material. The clinical symptoms and the lesions are described. The lesions in 4 cattle whose deaths are attributed to the consumption of this plant are described. - Vet.Bull., Weybridge, 29,(7),2228.

Noted

330. GRANSTRÖM, B. (Kungl.Lantbrukshögskola,Uppsala,Sweden). Studier over konkurrensen mellan ogräs och kulturväxter. [Studies on the competition between weeds and crops.] Växtodling, 1959, 10,11-21, (Sw.e.), tabs.8,bibl.8.
A fuller report of the work given in Weed Abstr., 6,1737. - L.K. [O.W.]

AQUATIC AND WOODY WEEDS AND THEIR CONTROL
See also 210,212,214,244,468.

331. SLAWINSKI, S. Preparat humusowy jako srodek zwalczania glonow. [Humus preparations for algal control.] Przegl. zool., 1958, 2,(1),61-3, (Polish.e.)
The best results were obtained by the use of an 8% humic acid powder to give a concentration of 0.015%. - From Ref.Zh.Biol., 1959, 88472. - L.K.

332. PIRIE, N.W. (Rothamsted Exp.Sta., Harpenden,Herts.,England). Water hyacinth: a curse or a crop? Nature,Lond., 1960, 185,(4706),116-7.
The author suggests that a use for Eichhornia crassipes should be sought. He considers that it may be an ideal plant for the extraction of leaf protein. - L.K. [O.W.]

333. ARNOLD, E.H. (Dep.Agric.,Auckland, New Zealand). Manchurian rice grass. Proc. 12th N.Z.Weed Control Conf., 1959, 82-4, figs.1.
The spread of Manchurian rice grass (Zizania latifolia) along the Northern Wairoa River and rivers of the Hauraki Plains has destroyed the drainage of many areas of pasture. The most effective means of control is Arundo donax which establishes rapidly and after several years smothers out the rice grass. Phormiumtenax, Pennisetum clandestinum and Pinus radiata help to inhibit the spread, but are slow to establish, while conditions are too wet for the growth of Cortaderia dioica and Arundinaria macrosperma. The following chemicals killed the top growth but were ineffective against regrowth from the rhizomes:- sodium chlorate 3 tons/ac over 3 years, TCA 900 # and monuron 200 #, dalapon 20 lb + amitrol 5 lb + wetting agent, dalapon 42 # in 210 gal + wetting agent. - M.E.L. [O.W.]

334. * ARLE, H.F. Weed control in irrigation systems. Cotton Gin & Oil Mill Press, 1959, 60,(6),62.

335. BANFIELD, G.L. (Dep.Agric.,Thames, New Zealand). New aspects of chemical control of weeds in drains. Proc.12th N.Z. Weed Control Conf., 73-6.
In drains in the Hauraki Plain area, early spring applications of a mixture of dalapon 2 # + amitrol 2 # + 2,4-D (ethyl ester) 2 # a.e. + 'Teepol' 3 pints in 60 gal of water, successfully controlled Scirpus maritimus, Typha angustifolia, Glyceria fluitans, Agrostis stolonifera, Paspalum distichum, Festuca arundinacea, Holcus

lanatus, Dactylis glomerata, Cotula coronopifolia, Nasturtium officinale, Plantago sp., Rumex sp., Convolvulus arvensis and Poa trivialis. Autumn spraying controlled G. fluitans. In drains which dried out during the summer, monuron 20 # was used for soil sterilisation but was more expensive than the dalapon mixture treatment, was not effective against growth on sides of drains, and failed to control Paspalum dilatatum, Plantago spp. and G. fluitans. - M.E.L. [O.W.]

336. TAUBAEV, T. [Weed control in infested canals.] Selsk.Uzbekistana, 1958, (7), 50-2, (Russ.)
Includes the recommendations that mulberry trees be planted on the banks to shade out aquatic vegetation.- From Ref.Zh.Biol., 1959, 79568. - L.K.

337. TIMMONS, F.L. (U.S.Dep.Agric., Washington 25,D.C.,U.S.A.) Phreatophytes - water wasters - a menace in the arid west. Reclam.Era, 1959, 45,(4),85-8,107,108, figs.7.
The following species are listed as undesirable phreatophytes: Tamarix pentandra, Salix spp., Baccharis glutinosa, Prosopis juliflora and Sarcobatus vermiculatus. Despite high cost, mechanical control is being used in many localities, especially for clearing water channels. 2,4-D and/or 2,4,5-T, and 2,4,5-TP are being used quite extensively, applied both by ground equipment and as aerial sprays from helicopters and aeroplanes. Some estimates of water losses caused by these weeds are given. - J.W.B. [O.W.]

338. UNITED STATES. CMU to control hardwoods. Rep.Cent.Stat.For.Exp.Sta. 1958, 1959, 39.
In the Missouri Ozarks all overstorey hardwoods (mainly oaks [Quercus spp.]) were killed by sprinkling active monuron 5-8 # in a 6 in. circle round the tree; the area was then planted with Shortleaf pine [Pinus sp.]. After 3 years 68% of the surviving pines averaged 3 ft in height. Extreme care should be taken when using monuron due to its toxicity to pines. - J.W.B. [O.F.]

339. LEONI, A. (Certiera Vita Mayer & C., Milan,Italy). Esperimenti sul controllo e la lotta contro la vegetazione infestante nei rimboschimenti della brughiera lombarda. [Experiments on the control of infesting vegetation in reafforestation areas of the Lombardy heath areas.] Monti e Boschi, 1959, 10,(3),123-35, (It.f.e.), figs.8.
The author describes the following methods which were tried out during 5 years' experimenting in coppice woods: ploughing, handcutting, underplanting with shade tolerant conifers, and chemical poisoning.
Castanea sativa, "farnia" [Quercus sp.], hazel [Corylus avellana], birch [Betula sp.] and alder [Alnus incana] were effectively controlled by AMS crystals applied either to notched trunks or to cut stumps. The best time to apply was from November to mid-February. AMS crystals gave good top kill but produced vigorous sprouting of Robinia pseudoacacia and this was not completely controlled by spraying the following 2 summers with 2,4-D or 2,4,5-T. It was foundthat where R. pseudoacacia was dominant, ploughing up was the surest and cheapest control method but on steep slopes where it is not practicable, gradual conversion with the help of shade tolerant conifers is advised. Continual cutting of regeneration is the most expensive method. - D.M.L.S. [O.F.]

340. LEONARD, W.F. and BEGGS, J.P. (Dep. Agric.,Christchurch,N.Z.) Spanish heath can be controlled and land free of it protected against infestation. N.Z.J.Agric., 1959, 99,(5),417-21, figs.3.
A resume is given of trials undertaken since 1947 for the control of Erica lusitanica from which it emerged that 2,4-D (ethyl ester) in diesel oil at 2 # for 2 years in succession applied October-March (N.Z. season) gives the best results. 2,4,5-T (ester) will also kill it but at higher rates more frequently applied. White clover was successfully established on land cleared of E. lusitanica and fertilised with phosphate or molybdenum provided lime at 3-5 cwt/ac was also added. The best way to forestall infestation is to improve soil fertility. - D.M.L.S. [O.RE.]

341. CURRIE, J.D. (Dep.Agric.,Hamilton,N.Z.) Gorse control on unploughable hill country. Proc.12th N.Z.Weed Control Conf., 1959, 65-72, figs.3.
Four methods of gorse (Ulex europaeus) control were investigated and their costs compared. Each area was top-dressed aerially with molybdenum superphosphate 672 # on 13/3/57 and serpentine superphosphate 336 # in autumn 1958 and enclosed by 4-wire electric fence in winter 1957. Except in trial 4, Government certified seed 30 # was used (crested dogtail 3 lb,

cocksfoot 4 lb, paspalum 4 lb, perennial ryegrass 12 lb, white clover 2 lb, tallarook subterranean clover 4.25 lb, and Lotus major 0.75 lb).

In trial 1, 14.5 ac dense old-man gorse and bracken 6 ft, untreated for at least 5 years, was burnt 4/3/57, sheep grazed and top-dressed prior to oversowing 11/4/57. Continued tight-stocking controlled regrowth, except in the very wet spring of 1958. Spot spraying (20/1/59) with 2,4,5-T 1.4 # a.e. gave browning off of most hardened 18 in. regrowths after 5 months. Resulting dense pasture consisted of strong ryegrass and clovers with some paspalum and cocksfoot. Total cost £22.3.0. Loss of profit on sheep (5/- a head) was much less than in trials 2, 3 and 4. Trial 2 was carried out on 4.5 ac of gorse + bracken fern 3 ft regrowth from a burn 2 years previous. Ground spraying with 2,4,5-T 4.95 # a.e. + rhodamine 0.25 # in 300 gal 8/4/57 gave 70-80% browning off after 4 months and 50% kill by January 1958. The area was part-burnt and oversown. 2,4,5-T 1.3 # a.e. spot sprayed in January 1959 gave 95% control of regrowth. Total cost was £32.6.0. Pasture was inferior to 1.

Blocks 3 and 4 consisted of fairly dense gorse 4 ft + broom and bracken fern, burnt 2 years previously, oversown with clovers and top-dressed but rapidly reverting.

In block 3, aerial spraying with 2,4,5-T 3.6 # a.e. in 60 gal 7/3/57 gave 95% kill after 3 months. The area was burnt 12/2/58 and oversown. 2,4,5-T 1.4 # a.e. was spot sprayed January 1959, giving 80% control of regrowth, but gorse seedlings were still present. Cost £34.6.0. Pasture consisted of clover and fog, with ryegrass only in the fertile patches.

Block 4 was treated as 2. Ground spraying gave 90% kill by January 1958. Oversown with clovers 6.5 # after burning, and crushed with stock. About 40% was densly covered with bracken fern, young broom and manuka so spot spraying of the gorse regrowth was not attempted. Cost £24.6.6. - M.E.L. [O.W.]

342. MOSS, G.R. (Dep.Agric.,New Plymouth, N.Z.) The gorse seed problem. Proc.12th N.Z.Weed Control Conf., 1959, 59-64, tabs.2, bibl.9.

In New Zealand, gorse (Ulex europaeus) reaches an average height of 20 ft and produces viable seeds twice yearly. Methods of seed-dispersal are, ejection by dehiscing pods (up to at least 16 ft) assisted by strong winds, fast flowing streams or use of gravel from gorse infested riverbeds for construction work, animals and man. Seeds extracted from bird droppings included Brassica campestris, Amaranthus spp., Setaria italica and Phytolacca octandra but no gorse. Preliminary observations showed that 96% of the seed was in the upper 2 in. of the soil. Seed populations/ft² at 2 in. depth in soils from 11 areas previously cleared of gorse were estimated. Results suggested that while most gorse seeds lose their viability in the first few years, some may retain it for 26-28 years. In unploughable areas it was essential to kill or render the seeds permeable (and thus able to germinate). High populations were found in areas where spraying, but not burning, was used. The author considers that, during the first 10 years after clearing, seedling growth must be controlled by efficient grazing to maintain a tight sward.

2,4,5-T 1.9 # a.e. in 400 gal, on rapidly germinating gorse seeds prevented shoot development and caused stunted root growth.

Gorse seed weevils (Apion ulicis) give only partial control since they remain dormant during winter seeding. In the Wangahui district 20-40% of summer seeds were destroyed and in Manawatu 41% of the pods examined contained weevil; however, partly eaten seeds will germinate if the embryo is undamaged. - M.E.L. [O.W.]

343. UNITED STATES. J.Anim.Sci., 1959, 1174.

Experiments by P.T. Marion and fellow workers at the Texas Agricultural Experiment Station have shown that chipped and ground wood from green stems of mesquite (Prosopis juliflora) makes a very satisfactory ingredient in winter feed for beef cattle. Mesquite wood meal contains 6% protein, 35% NFE, 48% fibre, and 30% carotene. Steers fed rations containing 50% mesquite meal gained up to 2.5 lb live weight daily. - Herb.Abstr., 29,(4), 1928.

344. PHOTIADES, T. Palloura and its control. Countryman,Nicosia, 1959, 26-7.

A description is given of palloura (Zizyphus lotus). This perennial weed was controlled by spraying it freely in June-July with 2,4,5-T at 39 ml/gal diesel oil. Bushes with foliage not reduced by cutting in the previous 3-4 years are more susceptible and a complete kill may result from 1 application only. - Field Crop Abstr., 12,(4),2003.

345. UNITED STATES. Killing unwanted trees. Rep.Cent.Stat.For.Exp.Sta. 1958, 1959,38-9.
Applying 2,4,5-T to axe-frills was the most effective but also the most expensive method of eliminating culls on an upland hardwood area (mainly oaks [Quercus spp.] and hickory [Carya sp.]) though the cost per killed tree (with 90% mortality) was much less than for the other 3 methods (not specified). To treat a number of trees totalling 100 ft^2 in basal area, 10.8 man-hours of labour and 13.4 gal of solution were needed. In controlling the hardwood understorey of pine stands with 2,4,5-T in the Mississippi Ozarks the cost of about $15/ac is estimated to be recovered in 4-5 years by the gain in pine volume growth. - From For.Abstr., 20, 4572. - J.W.B. [O.F.]

346. WALTERS, C.S. and PETERSON, K.A. Burning tree-trunks with Stumpfyre. Circ. Ill.agric.Ext.Serv., 1958, 795,pp.6, figs.
Stumps were impregnated through vertical bore holes with a mixture of 3 parts by weight of cupric chloride, 9 of sodium dichromate, 2 of basic lead acetate and 2 of manganese chloride, thinned with 2 pints of water. When fired, such stumps were burned to the extent of 80% compared with 30% for untreated stumps. - Hort.Abstr., 29,3488.

347. UNITED STATES. Hand grubbing 'sure kill' for mesquite. New Mexico Ext.News, 1959,39,(10),4-5, figs.2.
The most economical method of controlling mesquite [Prosopis spp.] for plants with a crown spread of 30 in. or less is by severing the roots below the budding zone about 4 in. below the surface of the soil. Chemical control is necessary for larger plants. - M.E.L. [14(78.9)]

OTHER WEEDS AND THEIR CONTROL

See also 210,212,229,231,232,233,236,241, 242,249,255,256,259,268,287,295,335,468, 478.

348. UNITED STATES. Productive pastures control broomsedge. Crops & Soils, 1959, 12,(1),26.
Cultural practices that promote abundant pasture growth are reported to keep broomsedge [Andropogon virginicus] in check. Seedbeds should be thoroughly disked and harrowed after applying the necessary lime and fertilizer. On pastures heavily infested with broomsedge, summer fallowing and fall seeding of a recommended cool-season mixture is advised. Spring renovation is recommended where warm-season perennials are to be established. Three points to remember when using this method to control broomsedge are: (1) avoid over-grazing in the spring; (2) apply the needed lime and fertiliser with special emphasis on nitrogen; and (3) mow the pastures once or twice during the summer to prevent seed formation. When pastures have a good stand of forage plants, liming, fertilising, occasional mowing, and proper grazing may be sufficient to keep broomsedge in check. J.W.B. [O.W.]

349. McVEAN, D.N. (Nature Conservancy, Edinburgh,Scotland). Muir burning and conservation. Scot.Agric., 1959, 39,(2),79-82.
Includes the information that where heather moor contains much molinia grass [Molinia caerulea] or deer hair sedge, burning leads to an increase in these plants at the expense of the heather [Calluna vulgaris]. This is also true of heather-cotton grass [Eriophorum angustifolium] mixtures although stool regeneration of the heather is here encouraged by the dampness of the soil. - D.M.L.S. [O.RE.]

350. HOSKING, W.J. (Dep.Agric.,Treasury Gardens,Melbourne C.2,Vict.,Australia). Control of round-leaved rushes in pastures. J.Dep.Agric.Vict., 1959, 57,(10),657-9, figs.7.
The following control measures are discussed: improvement in drainage; improving pasture growth by cultivation and seeding to suitable pasture species; grazing - stock will graze rushes [Juncus spp.] which are young and fresh and when alternative feed is scarce; mowing 2 or 3 times a year (summer being the most effective time); spraying rushes up to 9 in. in diameter in spring with 2,4-D (ester) 1.5 # a.e. in 100 gal of water; and hoeing - a method suitable for small or medium-sized plants, which should be carefully disposed of afterwards. - J.W.B. [O.W.]

351. LEONARD, W.F. (Dep.Agric.,Christchurch, N.Z.) Control of rushes. N.Z.J.Agric., 1959, 99,(5),427.
2,4-D (emulsifiable esters) 2 # have given the best results against Juncus polyanthemos and should be applied to regrowth about 2 months after cutting before stems harden with

the dry weather. Drainage, soil improvement and good management are important to reduce risk of re-infestation. - D.M.L.S. [O.RE.]

352. WATSON, K.A. (Reg.Res.Sta.,Samaru, Zaria,N.Nigeria). Herbicide trials on Imperata cylindrica. Pest.Abstr.News Summ. (C), 1959, 5,(4),144-7, bibl.2.
Unreplicated plots of I. cylindrica were sprayed logarithmically on June 21st. Amitrol 38 # and monuron 60 # + dalapon 8 # did not eradicate the weeds. Dalapon >6 # killed all top growth and prevented regrowth during the following wet season, and was more effective than the mixture. - L.K. [O.W.]

353. VERMA, R.D. and BHARDWAJ, R.B.L. (Agric.Res.Inst.,New Delhi,India). Control of baru (Sorghum halepense). Sci. & Cult., 1959, 24,(9),425-6.
Trichloroacetic acid (TCA) at 30 or 60 # when applied in single doses at the end of 6 cultivations at approximately fortnightly intervals completely eradicated S. halepense. Biol.Abstr., 34,(3),8485.

354. DE WEILLE, G.A. Biologische alang-alangbestrijding. [Biological control of lalang.] Het alang-alangvraagstuk. [The lalang problem.] Mechanische bestrijding van alang-alang. [Mechanized control of lalang. Chemische alang-alangbestrijding. [Chemical control of lalang.] Ber.Alg. Proefst.AVROS,Medan, 1957, 12, pp.8,figs., bibl.6; 1958, 16,pp.19, bibl.17; 1958, 17, pp.10, bibl.11; and 1958, 22,pp.55, bibl.22, (e.indonesian).
Examples are given of biological control of Imperata cylindrica by encouraging competing plant species (Stylosanthes, Mikania, Commelina, Pueraria, Gmelina, Acacia and Cassia). In the second article the author discusses lalang competition with growing crops, and briefly describes mechanical, chemical, biological and physical (flame gunning along rail tracks) control methods. Chemical control, in spite of its expense, is preferred to mechanical control which may damage tree roots.
Mechanical control of lalang works in 2 ways, viz. weed removal and the physiological weakening of the weed. Mechanical control should be followed by chemical or mechanized spot treatment.
In large-scale trials of chemical control, power spraying was much more effective and cheaper than hand spraying. The herbicides sodium arsenite, Shell weedkiller EF140 (in aqueous emulsion), and Shell lalang oil (in solar oil) were used. Mist blowers were practicable for weed control, provided that the mist was blown directly downwards just above ground level. - Hort.Abstr., 29, 2397.

355. WATSON, K.A. (Reg.Res.Sta.,Samaru, Zaria,N.Nigeria). Herbicide trials on Cynodon dactylon. Pest.Abstr.News Summ. (C), 1959, 5,(4),148-53, tabs.1,bibl.6.
Dalapon 5-10 # in 10-80 gal/ac gave nearly complete control of Cynodon dactylon; MH 25 and 50 #, TCA 40 #, PCP and amitrol 21 # were not effective and amitrol 21 + dalapon 8 # or dalapon 21 + monuron 3.3 # were not more effective than dalapon alone. The only treatments that appeared to have any injurious effect on cotton sown about 30 days later were TCA and MH. - L.K. [O.W.]

356. MITCHELL, B.A. (For.Res.Inst., Malaya). Research items. Site preparation by manual and mechanical means on degraded lands in Malaya. Malay.Forester, 1959, 22,(3),226-37, figs.4,tabs.3,bibl.6.
In trials carried out between 1953 and 1958 for clearance of Imperata cylindrica, Gleichenia linearis and low scrub prior to and after planting, G. linearis was the only vegetation type amenable to complete manual clearance. Ploughing I. cylindrica was ineffective as it always redeveloped long before the planted trees could suppress it by their shade; continued cultivation caused harmful soil exposure. When partial eradication in the vicinity of the planted trees only was tried, manual methods achieved rapid establishment with some fire-protection but at too high a cost for large scale use. Forking was more satisfactory in controlling Imperata than sodium arsenite or phytotoxic oil. The most successful mechanical method of partial eradication appeared to be initial cultivation by disc plough, disc harrow and tined cultivator with rotovating thereafter. The high cost was, however, thought justifiable only where valuable timber-wood trees were planted. Details are given of times and costs of mechanical operations. - D.M.L.S. [O.F.]

357. VALLANCE, L.G. Guinea grass and para grass control. Cane Gr.quart.Bull., 1958, 22,(2),66-8, figs.2.
Guinea grass (Panicum maximum) seedlings 1-2 in. high in sugarcane, which were sprayed on January 15th with (2,4-D 4 # + Pentasote (PCP + creosote + mineral oil)

4 gal/ac) in 100 gal water/ac, were eliminated and further germination was retarded. By March the cane crop had recovered from the earlier guinea grass competition. Dalapon at 20 and 30 # was applied to guinea grass on headlands and roadsides; the grass appeared dead at first but within 4 to 6 weeks it made rapid regrowth. A further application depressed the regrowth but did not completely eradicate the weed. Due to the price of dalapon this method of control is not economical for large areas.

Para grass (Brachiaria mutica) in irrigation and drainage channels has been controlled by TCA 100 # applied before the wet season commences; if necessary a second application can be made in the middle of the year. Dalapon at 30 # will, in many cases, cause growth suppression for 2 to 3 months, then respraying is necessary. This also is not economical in large areas. - J.W.B.

[128(94)]

358. GREAT BRITAIN. Carbyne. Tech.Inf. Bull.Fisons Pest Control Ltd., (n.d.), pp.12, tabs.5.

Summarises the results of the past year's experimental work in Britain, Sweden and Denmark with Carbyne (containing 11.8% 4-chloro-2-butynyl-N-(3-chlorophenyl) carbamate). Avena fatua is most susceptible at the 1.5-2 leaf stage; there has been considerable variation in its response to a given rate of Carbyne. Recommendations for trial use for spring and winter wheat are 3.5 oz/ac, for barley 6-8 oz (except for the particularly susceptible vars. Proctor and Provost), and peas, field beans, potatoes, sugar beet and brassicas 0.75 # (the latter crops appear to tolerate ca. 2 #). There was greater selectivity in cereals under conditions of high soil fertility. Volume rates of 5-20 gal/ac give the best results and there are indications that cone nozzles may give better results than fan nozzles; a competitive crop is also necessary for good results. Nearly all broad leaved weeds are resistant to 2 #, although Polygonum spp. and Portulaca grandiflora appear to be moderately susceptible. There is some evidence that interaction in the plant occurs with growth regulator herbicides. The acute LD 50 to rats and rabbits is 600 mg/kg, to hens 700 mg and to pheasants 800 mg, it appears to be of low chronic and dermal toxicity. There is thought to be no residue problem. - L.K.

[O.W.]

359. HAHLIN, M. (Kungl.Lantbrukshögskola, Uppsala, Sweden). Försök med IPC och kalkkväve mot flyghavre, Avena fatua L. [Experiments with propham and calcium cyanamide on wild oats, Avena fatua L.] Växtodling, 1959, 10, 22-30, (Sw.e.), figs.5.

From 1 one-year and 1 four-year pot experiment it appears that: (1) propham 10 kg/ha greatly decreases the germination of non-dormant seed but has little effect on dormant seed (the dormant seed was affected more by spring than by autumn application) and (2) calcium cyanamide 500 and 1000 kg/ha in spring or autumn markedly reduced total germination of both dormant and non-dormant seed. - L.K.

[O.W.]

360. WIBERG, H. (Kungl.Lantbrukshögskola, Uppsala, Sweden). Kemiska medel mot flyghavre. [Chemical compounds against wild oats.] Växtodling, 1959, 10, 31-9, (Sw.e.), tabs.12, bibl.9.

In field trials chlorpropham 5 and 10 kg/ha, propham 5 and 10 kg/ha, TCA 5-120 kg/ha, monuron 20-120 kg/ha, dalapon 20 and 40 kg/ha and 2,4,5-T 20 and 40 kg/ha were applied immediately before sowing peas for the control of Avena fatua; chlorpropham was the most effective of the selective compounds. Dinoseb pre- or post-em. was ineffective. In other field trials CDAA 6 and 12 kg/ha, chlorpropham 5 kg/ha, Difenson [4-chlorophenyl-4-chlorobenzolsulphonate] 10 and 20 kg/ha and CDEC 6 and 12 kg/ha were applied 14 days before sowing peas - chlorpropham was the most effective and the most selective compound. In a laboratory experiment CDAA 6 and 12 kg/ha was applied 2 weeks before, or at sowing, various crops. When applied at sowing all crops were injured. When applied before sowing the high rate caused little or no injury to peas, and the low rate little or no injury to rye, rape, and oats; linseed, wheat and barley were injured by all treatments. In 1 trial chlorpropham or CDAA were applied 2 weeks before sowing peas and dinoseb 1 week after emergence - the crop suffered no injury. - L.K.

[O.W.]

361. AAMISEPP, A. (Kungl.Lantbrukshögskola, Uppsala, Sweden). Klorerade fenoxiättiksyrors inverkan på vegetativ utveckling, frösättning och groningsbiologi hos flyghavre. [The effect of phenoxyacetic acids on the vegetative development, seed set and germination biology of wild oats.] Växtodling, 1959, 10, 58-67, (Sw.e.), figs.1, tabs.4, bibl.5.

In a number of experiments 2,4-D, MCPA and 2,4,5-T (acids 99% pure) dissolved in 25% ethanol were applied to Avena fatua (from 2 sources) and Herta barley at the 4-5 leaf stage. The following table summarises the results obtained on Avena (4 moles/ha = ca.

normal rate of application, i.e. ca. 1 #):-

	% plants killed	No. ripe panicles	% Dry weight/plant	Seed production/plant	1000 grain weight
Control	0	18	100	100	18.8
MCPA 4 moles/ha	0	42	128	147	18.7
2,4-D 4 moles/ha	0	32	90	75	17.5
2,4,5-T 4 moles/ha	0	57	124	122	20.5
MCPA 10 moles/ha	0	29	126	113	19.4
2,4-D 10 moles/ha	43	16	81	50	15.4
2,4,5-T 10 moles/ha	26	18	106	87	19.8
MCPA 20 moles/ha	12	12	110	86	17.3
2,4-D 20 moles/ha	52	1	69	36	14.6
2,4,5-T 20 moles/ha	32	19	106	87	17.9

At 10 moles/ha all compounds had little effect on the germination of Avena seed while at 20 moles/ha it was increased 3 times by MCPA, 8 times by 2,4-D and 18 by 2,4,5-T. Barley was affected least by 2,4,5-T and even 15 moles/ha (the highest rate used) caused negligible deformity and increased yields; it did, however, retard the crop more than MCPA. 2,4-D had the severest effect on the crop. None of the compounds at any rate had any appreciable effect on barley germination. - L.K.
[O.W.]

362. MERRY, D.M.E. (Dep.Agric.,Pukekohe, N.Z.) Barley grass control. Proc.12th N.Z. Weed Control Conf., 1959, 77-81.
In trials, winter (June, July or September) applications of TCA 20 # in 100 gal to moist pasture was a more effective but less economic method of controlling barley grass [Hordeum murinum] than dalapon 2 # in 80 gal sprayed in July and September to short evenly grazed pasture. Dalapon 4-6 # + amitrol in September killed most grasses including ryegrass and some cocksfoot but not paspalum nor white clover. Use of amitrol increased the damage. - M.E.L.
[O.W.]

363. YEATES, J.S. (Massey agric.Coll., Palmerston North,New Zealand). Chemical control of barley grass in pasture. Massey agric.Coll.Sheepfarming Annual, 1958, 173-5.

The injurious effects of Hordeum murinum to domestic animals (particularly sheep) are outlined. Infestations are rare in closely grazed pastures providing an unbroken cover. The seeds nearly all germinate in the year in which they are shed. Control by TCA and dalapon is mentioned. - L.K. [50(931)]

364. DUNHAM, R.S., ROBINSON, R.G. and ANDERSEN, R.N. (Agric.Exp.Sta.,St.Paul, Minnesota,U.S.A.) Crop rotation and associated tillage practices for controlling annual weeds in flax and reducing the weed seed population of the soil. Tech.Bull. Minn.agric.Exp.Sta., 1958, 230,pp.19, figs.5,tabs.11,bibl.14.
The effect on weediness and yield of flax was compared at 3 locations of (A) 2 crop rotations over a period of 10 years (1) maize, flax, lucerne, lucerne-and. (2)oats, flax, red clover + timothy, and maize); (B) various types of seedbed preparation preceding flax - after maize (1) disced and harrowed or (2) ploughed, disced and harrowed, and after oats (1) ploughed, disced and harrowed in August, (2) disced and harrowed in August, (3) ploughed in September; (C) hand hoeing maize at lay-by; the principal weeds were Setaria lutescens and S. viridis. There was little consistent difference between treatments and none of the treatments had any appreciable effect on the

total weed seed content of the soil. Yields of the flax after maize tended to exceed those after oats; yields after oats were higher with early, than with late, ploughing. The amount of Setaria spp. and Echinochloa crus-galli seed was reduced by hoeing maize and by discing maize stubble but not by hoeing and ploughing. Hoeing did not reduce Chenopodium album and Portulaca oleracea and only hoeing maize and ploughing was effective against mustard [Sinapis arvensis]. In the oats rotation there was some reduction of the above spp. by August tillage; however, the treatments were more effective against Setaria spp. and C. album than mustard or P. oleracea. There was little difference between the samples of weed seeds taken from depths of 3.5 and 7 in. - L.K. [31(77.6)]

365. TEMPANY, H. and GRIST, D.H. An introduction to tropical agriculture. Longmans, Green & Co., 1958, pp.347, figs.27, bibl.211.
Includes a chapter on cultivation and weed control. - D.M.L.S.

366. SVENSSON, K. (Kungl.Lantbrukshögskola, Uppsala,Sweden). 2,4-D mot maskros i betesmark. [2,4-D for the control of dandelions in permanent pasture.] Växtodling, 1959, 10,119-33, (Sw.e.), figs.6,tabs.6,bibl.15.
A pasture infested with Taraxacum spp. was sprayed with Dif (2,4-D amine 235 g/l) 15 l/ha and Weedone (2,4-D ethyl) 15 l/ha (1) at the rosette stage, 20th May; (2) at the bud stage, 31st May; (3) on 17th June; (4) on 5th August and (5) on 25th August or on 26th September with 15, 30 or 45 l/ha. Application was made in 1250 l/ha of water and the treated plots received normal management. At the first 2 dates the ester gave better (90-95%) control than the amine (85%); however, the different formulations had similar effects on Taraxacum. Spraying on either of the first 2 dates had little effect on white clover for the ester and on the first date for the amine; the first 3 dates all had little effect on other desirable spp. (Poa pratensis, Phleum pratense and Dactylis glomerata). The late spraying eradicated clover, damaged the grasses and was much less effective than earlier spraying on Taraxacum; it did, however, eliminate Achillea millefolium, whereas the earlier spraying, except for the penultimate, had little effect. - L.K. [O.W.]

367. ZANARDI, D. (Osservatorio Fitopat., Pavia,Italy). Nuove prove di diserbo dell' Erba medica. [New weed control tests in lucerne.] Colt.e Gior.Vinic.Ital., 1959, 105, (7/8),200-2, (It.), bibl.2.
Dinoseb 24 kg/ha applied in February to well developed Stellaria media gave complete kill without injuring dormant lucerne. Monuron and diuron both at 3 kg/ha gave good control (monuron being slightly superior); chlorpropham 12 kg/ha was ineffectual; none of these 3 injured the lucerne. When applied at 3 and 6 kg/ha in April to lucerne in active growth dinoseb again killed S. media but caused injury to the lucerne. - D.M.L.S. [59(45)]

368. ÅBERG, E. (Kungl.Lantbrukshögskola, Uppsala,Sweden). Verkan av klorerade fenoxiättiksyror på buskmåra, Galium mollugo L., i timotejfrödlingar. [The effect of chlorinated phenoxyacetic acids on hedge bedstraw, Galium mollugo L., in timothy seed crops.] Växtodling, 1959, 10,134-48, (Sw.e.), figs.17, tabs.9,bibl.3.
In preliminary trials with commercial formulations 2,4,5-T + 2,4-D gave appreciably better control of G. mollugo than MCPA or 2,4-D, and slightly better than dinoseb (ammonium). In further trials with the same formulations (excluding dinoseb), in which applications were made every 3 days from late April till late June, 2,4,5-T + 2,4-D was again most effective and less affected by time of application than either 2,4-D or MCPA - none of the compounds decreased the stand of timothy. The earliest sprayings had a greater carry over effect into the next year than the late (from early May onwards). In further trials, pure 2,4,5-T was more effective than 2,4,5-T + 2,4-D and applications made even in June had as great an effect the year after spraying as in the year of spraying. 2,4,5-T @ 2.5 l/ha decreased the yield of a weed free crop of timothy slightly but it is thought that even higher rates would be beneficial in a weedy crop; germination and thousand grain weight of timothy were unaffected by even 20 l/ha. - L.K. [O.W.]

369. MALIKOV, M. [Chemical means of controlling Trichodesma sp.] Trud.Uzbek.Univ., 1958, (84), 57-9.
Trichodesma sp. has been easily controlled in wheat by 2,4-D or MCPA 1.5 kg/ha. - From Ref.Zh.Biol., 1959, 75699. - L.K.

370. SEXSMITH, J.J. (Agric.Res.Sta.,Lethbridge,Alberta,Canada). Influence of the ester of 2,4-D applied at various growth stages for the control of Russian thistle (Salsola pestifer Nels.) in flax. Canad.J. Pl.Sci., 1959, 39,(4),458-65, figs.5,tabs.1, bibl.21.
A more detailed account of Weed Abstr., 6,1402 is given. - J.W.B. [216(71)]

371. MATTHEWS, L.J. (Dep.Agric.,Wellington, New Zealand). Weed identification and control. Californian thistle. N.Z.J.Agric., 1959, 99,(4),313, figs.1.
Recommendations are given for the control of Cirsium arvense in various crops by several different weedkillers. - D.M.L.S. [O.RE.]

372. UNITED STATES. Biennial thistles added to Iowa noxious weed list. Crops & Soils, 1959, 12,(1),33.
All biennial thistles, including musk thistle [Carduus nutans], curled thistle [Carduus acanthoides], tall thistle [Cirsium altissimum], and pasture thistle [Cirsium floodmannii], are now included in the Iowa weed law as noxious weeds. - J.W.B. [O.W.]

373. DIERCKS, R. and JUNKER, H. (Landesanst.Pflanzenbau,Deggendorf,Germany). Fortschritte in der Technik der Ampferbekämpfung. [Progress in the technique of controlling docks.] Prakt.Bl.PflBau., 1959, 54,81-107, (G.)
Spot spraying Rumex obtusifolius using narrow, adjustable cone nozzles has given better results than overall spraying as the former method also results in the spray contacting the regenerative root crown. Using this method a single application of 2% mecoprop at an average of at least 65 ml/plant has given an average kill of >90%. MCPA (salt and ester) and MCPB (salt) only give adequate results under favourable conditions (high temperature, high humidity, no precipitation). Dry formulations of growth regulators have given the same results as mecoprop, but this method is slow and therefore costly and can thus only be used on small infestations. Ground calcium cyanamide (33 g/plant) can also be used but is not equal to the growth regulators. - F. Arndt. [200(43)]

374. PRYOR, M.R. (Dep.Agric.,Calif.,U.S.A.) Hoary cress: new control findings. Bull. Calif.Dep.Agric., 1959, 48,(1),11-14, figs. 2,bibl.4.
Referring to the distribution and seed viability and to the use of amitrol, 2,4-D + borates, 2,4-D followed by cultivation, trichlorobenzoic acid [2,3,6-TBA] and 2,4-DB (dimethylamine) for hoary cress [Cardaria spp.] control. - J.W.B. [167(79.4)]

375. BLASZYK, P. (Pflanzenschutzamt, Oldenburg,Germany). Chemische Unkrautbekämpfung nicht nur im Getreide. I and II. [Chemical weed control not only in cereals. I and II.] Lohn.in Land--u.Forstwirt., 1959, 14,(3),43-4, (4), 60, (G.)
Includes the information that dalapon is used for control of chickweed [Stellaria media] in rape in the Low Countries. - L.K. [205(43)]

376. HRON, F. and VODAK, A. Polni plevele a boj proti nim. [Field weeds and their control.] Stat.zem.Nakladatelstvi, Prague, 1959, pp.383, figs.165.
From Landw.Lit.Czecho., 1959, 391.

377. VERMA, R.D. and KHAN, A.R. (Ind. Agric.Res.Inst.,New Delhi,India). 2,4-D the answer to weeds in wheat fields. Indian Fmg, 1959, 9,(6),23-4, figs.1,tabs.2.
Recent research has shown that Fumaria parviflora and Carthamus oxyacantha can be effectively controlled by 2,4-D. - D.M.L.S.

378. PHILLIPS, W.M. (U.S.Dep.Agric., Hays,Kansas,U.S.A.) New chemicals to control bindweed. Bull.Kans.agric.Exp.Sta., 1959, 408,pp.6, figs.2.
Referring to the use of polychlorobenzoic acid and TBA (consisting of 60% 2,3,6-TBA and 40% other forms of TBA or the equivalent) on field bindweed [Convolvulus arvensis]. - J.W.B. [19(78.1)]

379. SHIMOKAWA, M., OZAWA, H. and SUGIYAMA, C. Soil fumigation with methyl bromide, No. 3 (Parts 4 and 5). Bull. Kanagawa agric.Exp.Sta.,Hort.Branch, 1959, 7, 32-6, (Jap.e.)
Methyl bromide applied at the rate of 2.5 ml/30 cm^2 killed all annual and some perennial weeds in seed beds. As a fumigant, it was effective to a depth of 180 cm and, at a rate of 4 ml/30 m^3 was as effective as chloropicrin at the same dosage. - Hort.Abstr., 29,3493.

380. NURSEY, R.W. Bathurst burr control. Past.Rev., 1959, 69,(3),255.

Bathurst burr (Xanthium spinosum) can be controlled by cutting and burning before the burrs ripen, or by spraying before the flowering stage in February-March with 1.75 pints 50% 2,4-D(amine) per ac., in either high or low volumes of water. Sheep grazing on burr-infested pasture should be shorn before being transferred to clean land. - Herb.Abstr., 29,(4),1653.

381. HÅKANSSON, S. (Kungl.Lantbruks-kola,Uppsala,Sweden). Om höskallran och dess kemiska bekämpning. [Yellow rattle and its control.] Växtodling, 1959, 10, 148-55, (Sw.e.), tabs.4,bibl.8.
The distribution of Rhinanthus serotinus in Sweden, and the existence of subspecies is briefly discussed. In trials when the weed was in the cotyledon to bud stage, dinoseb 0.68 kg/ha (the lowest rate tried), gave complete control and may have had an appreciable residual effect, while MCPA ca. 1 kg/ha + dinoseb 0.68 kg/ha was much less effective. - L.K. [O.W.]

382. PRICE, L.N. Lower cost roadside maintenance by spraying. Rep.Nat.Res. Council Highway Res.Bd Comm.Roadside Dev., 1958, 41-7, tabs.1.
A successful 3 year spraying experiment is described inter alia, and a table included in which personnel and labour involved in maintenance by spraying and cutting is compared. - J.W.B. [48(74.9)]

Noted

383N. ÅBERG, E. (Kungl.Landbrukshögskola, Studier av olika åtgärder mot flyghavre, Avena fatua L., i ett växtföljdsförsök. I. [Studies of various means of controlling Avena fatua L. in a crop rotation experiment. I.] Växtodling, 1959, 10,40-53, (Sw.e.), figs.9,tabs.22,bibl.10.
A fuller report of the paper abstracted in Weed Abstr., 6,1771. - L.K. [O.W.]

384N. HARVEY, W.A. (Univ.,Calif.,U.S.A.) Morning glory in California. Proc.Calif. Weed Conf., 1959, 11,56-60.

385N. HAWKINS, J.C. (N.I.A.E., Wrest Park,Silsoe,Beds.,England). Cultivations. Paper read at Meet.Brit.Ass., 1959, pp.7, bibl.14.

Includes reference to weed control. The author considers that ploughs are the wrong shape for drawing behind modern fast tractors. - L.K.

386N. NORTHERN IRELAND. The destruction of charlock. Adv.Leafl.Min.Agric.N.Ire., 1956, 38,pp.4. [16(416)]

387N. SYLWESTER, E.P. (Coll.Agric.,Ames, Iowa,U.S.A.) Those stubborn Canadian thistles. Hoard's Dairym., 1959, 104,(11),601,618-9.
Gives recommendations for the control of Canada thistle [Cirsium arvense] by cultural means, competitive crops, chemicals and soil sterilants. - L.K. [L.AM.]

CHEMISTRY, PHYSICS, TOXICOLOGY, RESIDUES AND SOILS

388. MATOLCSY, G. Synthesis of 2,4-dichloro-5-iodo-phenoxy ethanol labelled with ^{131}I isotope. Acta chim.Acad.sci.Hung., 1959, 20,(3),335-8, (hungarian,russ.), bibl.9. [7(439)]

389. KULKARNI, S.K.V., SATTUR, P.B., and NARGUND, K.S. (Univ.Karnatak.,Dharwar, India). Possible plant hormones. III. 2-acyl- and 2-alkyl-4-chlorophenoxyacetic acids. J.Karnatak Univ., 1957, 2,69-78.
Synthesis. - From Chem.Abstr., 53,14986b.

390. BASKAKOV, Ya.A. and MELNIKOV, N.N. Derivatives of hydroxyphenylamines as new herbicides. Khim.Nauka i Prom., 1958, 3, 683-4.
The o-, m- and p-hydroxy derivatives of propham (I) had very little or no herbicidal activity, whereas the N-derivative was as active as (I) and soluble in water. Their preparation and their % yield and m.p. are given. - From Chem.Abstr., 53,(8),7062i. - D.M.L.S.

391. NAGAI, Y. (Univ.Tokyo,Japan). A microdetermination of maleic hydrazide by reductive cleavage in acid medium and an example of its application. Nip.Nog.Kaishi, 1958, 32,851-5.
A micromethod for the determination of MH (I)

was proposed. The sample was treated with 4N H_2SO_4 at 100° for 120 minutes in the presence of Zn metal. The amount of hydrazine produced from (I) was determined by the method of Pesez and Petit or that of Wood. One of the advantages of the present method was that the whole procedure could be done in the simple apparatus open to air The method was applied to determining the rate of the absorption of (I) by mung bean. 10 g of mung bean was suspended in 50 ml of water containing 50µg/ml. of (I). The amount of (I) remaining in the medium after 2, 4 and 6 hours of incubation were 29, 15 and 0µg/ml, respectively. - Chem.Abstr., 53, 12927a.

392. ROTH, F.J., JACKSON, W. and DeLAY, P.D. (Calif.State Dep.Agric.,Sacramento, Calif.,U.S.A.) Simplified Gutzeit test for arsenic. Vet.Med., 1959, 54,327-9.
It has been shown that the Gutzeit test for As can be simplified and used as a direct toxicological test rather than the usual long wet digestion procedure. This was proved on laboratory test animals. This simplification makes it possible to run the test in a few minutes. The simplified Gutzeit test can be used for checking grasses for arsenical herbicides by putting 0.25-0.5 in.^{2} of leaf area of grass directly into a Gutzeit bottle, without macerating in the mortar, adding the chemical solutions and Zn. The test can also be used for detecting the presence of As in water. - Chem.Abstr., 53, 12938h.

393. PHILLIPS, G.F., DIXON, B.E. and LILLEY, R.G. (Chem.Dep.,Gov.Lab.,Clement's Inn Pass,Strand,London,W.C.2.,England). The volatility of organo-mercury compounds. J.Sci.Fd Agric., 1959, 10,(11),604-10, figs.3,tabs.4,bibl.13.
The saturated vapour concentrations at 35°C of 21 organo-mercury compounds R.HgX were measured by static and dynamic methods and the corresponding partial pressures derived. Values at 25°C and 45°C were determined for the 14 most volatile of these compounds and for mercury and mercuric chloride and the constants in the linear pressure-temperature relation calculated. Some correlation of vapour pressure was observed with the aryl or alkyl substituent R but not with the molecular weight or electronegativity of the partially covalent acidic radical X. The compounds included phenyl mercury acetate, the melting point of which was found to be 150-152°C. - M.E.L. [O.W.]

394. SMOLIN, E.M. and RAPOPORT, L. (Cent.Res.Div.,Amer.Cyanamide Co.,Stamford, Conn.,U.S.A.) s-Triazines and derivatives. Interscience Publ., 1959, pp.644, figs., tabs.,bibl.
A monograph in the series "The Chemistry of Heterocyclic Compounds". - L.K. [O.R.]

395. VIRAG, A. Vegyi gyomurtoszerek hatasa nehany mikroszkopikus gombara. [The effect of chemical weedkillers on some microscopic fungi.] Agrartud. Egyet.mezőgazd.Kar.Közl.1958, 1959, 343-56, (Hungarian,russ.g.)
Dichlorophenoxy- and chlorophenoxy-acetic acid and MCPA applied at 50-12.5% of their usual (6,000-8,000 mg/l) rate of application depressed the growth of Aspergillus niger and A. fumigatus in vitro, especially in the early stages of development. Foliar sprays of these materials applied in the field are unlikely to harm micro-organisms, since the quantities reaching the soil would be small. - Soils & Fert., 22,(6),2800.

396. ROSSMANN, W. Gesundheitsstörungen durch Gelbspritzmittel in einem Schweinebestande. [Illness in sows caused by an insecticidal fruit tree spray containing dinitro-ortho-cresol.] Dtsch.tierärztl. Wschr., 1959, 66,41-2, (G.e.)
Abortions, stillbirths and slow growth in pigs were attributed to the bedding which consisted of rape obtained from an orchard where the trees had been sprayed with DNOC. Bacteriological and serological tests were negative for brucellosis. - Vet.Bull.,Weybridge, 29,(8),2643.

397. LIEGEOIS, F. and DERIVAUX, J. Sur un aspect actuel de la toxicologie veterinaire. Pesticides et produits phytosanitaires. [A current aspect of veterinary toxicology. Pesticides and phytosanitary products.] Ann.Med.vet., 1959, 103,(2),89-134, (F.)
Herbicides are included among the compounds. Their toxicity, circumstances governing their toxic action, and mode of action of the toxic elements are stated, also the symptoms, diagnosis, and treatment of the resulting poisonings. - From Bull.agric.Congo belge, 50,(5), 1448. - D.M.L.S.

398. GREAT BRITAIN. Weedkillers. Fmrs' Weekly, 1960, 62,(5),46.
A letter to the editor reads: "The reputedly safe weedkiller 2,4-D is reported from the U.S.A. recently as having partially paralysed for many months 2 farmers and a housewife who wetted their arms or clothing with it. Nausea, etc., comes on a few hours after exposure, and in severe cases, numbness, pain and paralysis of the legs and arms gradually follow a few days later ..." L.K. [O.W.]

399. UNITED STATES. Tolerance for 2,4-dichloro-6-(o-chloroanilino)triazine. Federal Register, 1959, 24,1460.
A tolerance of 10 p.p.m. was promulgated for residues on celery. - From Chem.Abstr., 53,(8),7457f. - D.M.L.S.

400. HEINISCH, E. (Biol.Zentanst.,Berlin, Germany). Chemische Methoden zum Nachweis oder zur Bestimmung von Pflanzenschutzmittelrückständen auf oder in pflanzlichem Erntegut. [Chemical methods for the detection or determination of pesticide residues on or in plant produce.] NachrBl.dtsch. PflSchDienst,Berlin, 1959, 13,(9),161-5, (G.g.russ.e.), bibl.44.
In a survey of the literature, the principal methods of extraction of residues of pesticides from plant materials and the purification of these extracts from fat, oil, wax, pigments and water, which impair the ensuing analysis, are described. Purification of extracts may be carried out by partition analysis, adsorption, chromatography, freezing out, or by chemical methods. - From Author's Summary. - L.K. [O.W.]

401. SUBRA, P. and GUILLEMOT, J. The movement through the soil of a substituted urea herbicide. Fruits, 1959, 14,(3), 123-4.
As a measure of the location of the herbicide diuron in the soil, the length of the roots of the seedlings was measured in Vigna unguiculata. Soils of 3 types were treated in pots with 25, 50, 90, 170 and 330 mm of water as a fine spray. The toxicant moved downward more than 30 mm and the distance was little affected by the amount of simulated rain above 100 mm. The dosages tried were 0, 1.6 kg, and 4 kg diuron/ha. - Chem.Abstr., 53,15454i.

402. MICKOVSKI, M. Prilog poznavanju uticaja herbicida 2,4-D i MCPA na zemlijisnu i epifitnu mikrofloru prskanih parcela i biljaka. [Contribution to the knowledge of the influence of the herbicides 2,4-D and MCPA on the soil and epiphytal microflora of sprayed plots and plants.] Agrohemija, 1959, (8),58-63, (e.), tabs.3,bibl.13.
The author concluded that at the usual rates of application 2,4-D and MCPA do not have any harmful effect on the soil microflora but only on the epiphytal microflora of sprayed plants and particularly broad-leaved. From Author's Summary. - L.K. [O.W.]

403. FERDA, J. Pouziti chlorecnanu k hubeni lesni burene na tezkych pudach. [The use of Chloratan for weed control on heavy forest soils.] Vedecke Prace Vyzkum.Ustavu Zem. Mel., 1959, (2), 187-215, (Czechoslovakian. g.russ.), figs.16,tabs.12,bibl.47.
Sodium chlorate caused a deterioration in the physical condition of a heavy forest soil. Its use was followed by the appearance of a hydrophilic vegetation which had an unfavourable influence on tree growth. Sodium chlorate is not recommended for use on soils with a high water table or soils which are inclined to be damp. - From Lamb.Lit.Tschecho., 1959, 469.

404. CANADA. Rep.Ont.agric.Coll.exp.Fm, 1958.
p.35. Simazine. 3 months after applying 0.5-20 # simazine in May to a fallow loam soil, an average of 35.6% was still present. Penetration was greater for the smaller rates.
Wild carrot (Daucus carota). Though no difference was found in the effects of 2,4-D on the germination of seeds from wild carrot plants which were susceptible or resistant to 2,4-D, pre-em. treatment of the soil with 2,4-D resulted in a marked reduction in the emergence of susceptible seedlings compared with the resistant ones. In vivo studies indicated greater stimulation of the respiration of resistant plants than of susceptible plants on a short time basis. Experiments supported the theory that resistance to 2,4-D is related either to rapid metabolism of the herbicide, or to adsorption on inactive sites within the resistant strain. (See also Weed Abstr., 8,693 and 1947). - D.M.L.S. [O.W.]

405. BECKER, E. (Inst.Landtechnik,Potsdam-Bornim,Berlin,Germany). Eine neue Tropfenmessmethode des Pflanzenschutzes. [A new method of measuring pesticide drop size.] Dtsch.Agrartech., 1959, 9,(2),93-5, (G.), figs.4,tabs.1.
The use of methyl silicon oils to catch droplets for measurement is said to be more accurate than normal methods as the size of the droplets is unaffected on entering the oil, the oil is transparent and not miscible with most pesticides. Droplet size must be estimated before the droplets fall out of suspension; this varies from ca. 10-20 minutes depending on droplet size. A table shows suitable oils for various sized droplets. - L.K. [206(43)]

406. MARTIN, J.T. (Long Ashton Res.Sta., Bristol Univ.,England). Levels and distribution of deposits. Spraying Techniques in Agriculture, (n.d.), 55-68, figs.6,tabs.3, bibl.8.
With reference to physical and chemical examination of insecticide and fungicide deposits. - L.K. [393(42)]

407. BENGTSSON, A. (Kungl.Lantbrukshögskola,Uppsala,Sweden). Undersökningar över ytaktiva ämnen med särskild hänsyn till deras inverkan på effekten av natrium-2-metyl-4-klor-fenoxiacetat. [Investigations on surface active agent with particular reference to their influence on MCPA (sodium).] Växtodling, 1959, 10,172-87, (Sw.e.), figs.9,tabs.11,bibl.28.
Barley, peas, Sinapis arvensis and Chenopodium album were sprayed with MCPA of a surface tension of 50 or 35 dynes/cm and droplet sizes of 92 and 560 μ(both at 200 l/ha) in all cases the smaller drops were retained more effectively. On barley and C. album decreasing the surface tension of the small drops caused a smaller % increase in retention (estimated colorimetrically), than decreasing the surface tension of the large drops; with peas the reverse was the case. Decreasing the surface tension had little effect on S. arvensis at either droplet size. Flax was sprayed as above but at volume rates of 160 and 600 l/ha; increasing the volume rate decreased retention of the spray; however, the effect of decreasing the surface tension was proportionally greater both at high volumes and at large drop sizes. Several experiments were carried out with flax and linseed, in which the activity of MCPA was measured primarily as stem bending; in these it was found that: (1) the effect of MCPA increased with the amount of surface active agent added, (2) cationic and non-ionic surface active agents were more effective than anionic when applied at the same concentration, (3) the cationic quaternary ammonium wetter was much less effective than anionic or non-ionic when applied at concentrations giving the same surface tension (on barley a non-ionic and 1 of the 2 anionic wetters had the greatest effect although the cationic caused a greater decrease in the contact angle than the anionic). - L.K. [O.W.]

408. NIELSON, L.E., WALL, R. and ADAMS, G. (Monsanto Chem.Co.,800 N.Lindbergh Blvd, St.Louis 66, Missouri,U.S.A.) Coalescence of liquid drops at oil-water interfaces. Monsanto Tech.Rev., 1959, 4,(1),3-10, figs.5,tabs.7,bibl.7. [O.W.]

409. DOMBROWSKI, N., EISENKLAM, P. and FRASER, R.P. (High Speed Fluid Kinetics Lab.,Imp.Coll.Sci.,London,England). Flow and disintegration of thin sheets of visco-elastic fuels. J.Inst.Fuel, 1957, pp.11, figs.17,tabs.5,bibl.9. [397(42)]

410. * HALL, L.B. Variation of particle size, with pressure, from commonly used nozzles. Wkg Pap.World Health Org., May 1955, 9.

411. THOMAS, W.D.E. and POTTER, L. (Agric.Res.Sta.,Long Ashton,Bristol, England). Studies on liquid surfaces. 1. The vibrating jet method for the determination of dynamic surface tensions. Rep.agric.hort.Res.Sta., 1958, 146-51, figs.2,tabs.1,bibl.13. [O.RE.]

412. NETHERLANDS. The portable logarithmically diluting field plot sprayer after van der Weij. Int.Pap.Inst.biol. Scheikundig Onderzoek, (n.d.), pp.7, tabs.2.
Full descriptions are given of the standard (2m boom) model and of a 1.20 m boom model especially suitable for horticulture. Lists of component parts are included, also directions for use. - D.M.L.S. [188(492)]

413. SWEETMAN, I.C. (Rukuhia Soil Res. Sta.,Hamilton,New Zealand). A simple conversion of a standard precision sprayer for logarithmic spraying. Proc.12th N.Z. Weed Control Conf., 1959, 11-16, figs.2, bibl.3.

The tank of an 'Oxford Precision' sprayer was divided horizontally into an upper diluent (1200 ml) and a lower concentrate (330 ml) compartment. Rubber jets in the partition were arranged so as to allow rapid and even dilution of the concentrate when air pressure was applied to the diluent. Removal of jets enables simple precision spraying to be made. Flame photometric estimation of potassium and calcium in 11 ml samples collected at 1 second intervals during mixing of aqueous solutions of KCl (250 p.p.m. K) & $CaCl_2$ (250 p.p.m. Ca) showed rate of decrease in concentration was logarithmic over a concentration range of 80% to 8%. Calibration involving the colorimetric estimation of dye solution collected on filter paper strips enabled the transverse distribution characteristics of the jets to be observed. - M.E.L.
[O.W.]

PHYSIOLOGY, MORPHOLOGY AND ANATOMY

See also 220,231,252,269,270,404,407.

414. KHUBATIYA, R.A. (Inst.Plant Prot., Tiflis). [The transformation of 2,4-dichlorophenoxyacetic acid in crops.] Soobsh. Akad.Nauk.Gruzin,S.S.R., 1958, 21,313-18, (Russ.)
Tests on 2,4-D absorption were conducted on beans at the 8-leaf stage, by immersion in a 0.2% solution of 2,4-D. After predetermined periods of time, the plants were pulverized, extracted with a mixture (15:2.5) of 96% Et_2O and HOAc, followed by immersion in 20 ml of Et_2O. The filtrate, after standing for 24 hours showed free 2,4-D. The undissolved residue was then hydrolyzed with alkali for about 3 hours, neutralized, and then re-extracted as before. The extracts were evaporated under vacuum to obtain 2,4-D. To distinguish among the various cellular constituents, differential centrifugation was used; 2,4-D was determined chromatographically on each fraction. 2,4-D is rapidly absorbed during the first 6 hours and continues to be absorbed at a diminishing rate up to 96 hours after treatment. After penetration, 2,4-D is rapidly decomposed. Prior to full decomposition it appears to be linked to the plant substance (from which it can be freed by hydrolysis). 2,4-D concentrated in the cytoplasm in preference to other cell elements. - Chem.Abstr., 53,13280f.

415. KIERMAYER, O. (Biologische Forschungsabteilung der Osterreichische Stickstoffwerke A.G. Linz/Donau,Austria). Zur Beeinflussung der morphoregulatonischen Wirksamkeit von 2,3,5-trijodbenzoesäure (TIBA) durch α-Naphthylessigsäure. [On the influence of α-naphthylacetic acid on the morphoregulatory activity of 2,3,5-triiodobenzoic acid (TIBA).] Physiol. Plant., 1959, 12,(4),841-53, figs.4,tabs.2, bibl.22.
By simultaneous application of α-naphthylacetic acid various developmental abnormalities induced by 2,3,5-triiodobenzoic acid could be reduced or completely abolished. - C.C.McC.
[O.W.]

416. MAHESHWARI, P. (Delhi Univ.,India). Hormones in reproduction. Indian J.Genetics & Plant Breed., 1957, 17,(2),386-97.
While flowering is controlled predominantly by temperature and photoperiod, there seems to be a relative balance of auxin and antiauxin which is necessary. In several cases it has been possible to hasten flowering by treating the plants with auxins like 2,4-dichlorophenoxy acetic acid (2,4-D), sodium salt of naphthaleneacetate (NAA) and indoleacetic acid (IAA). In others 2,3,5-triiodobenzoic acid (TIBA) or maleic hydrazide (MH), both antiauxins, serve the same purpose. A number of growth regulators have been found to have a direct effect upon sexuality in monoecious cucurbits. An increase in auxin level diminishes the total number of flowers formed but promotes the early appearance of female flowers, and reduces the ratio of male to female flowers. Maleic hydrazide may differentially inhibit microsporogenesis and thus effect the functional balance of sex in both monoecious and hermaphrodite species. - From Biol.Abstr., 34,(3),8628.

417. NIEDERGANG-KAMIEN, E. and LEOPOLD, A.C. (Purdue Univ.,Lafayette,Indiana,U.S.A.) The inhibition of transport of indoleacetic acid by phenoxyacetic acids. Physiol.Plant., 1959, 12,(4),776-85, figs.2,tabs.4,bibl.15.
Evidence is given that the previously reported inhibition by 2,4-D of the transport of indoleacetic acid through sunflower stem sections is a real effect on transport itself and not merely on the uptake of indoleacetic acid. Comparisons were made of the transport inhibition by 11 differently chlorinated phenoxyacetic acids. - C.C.McC. [O.W.]

418. CRAFTS, A.S. (Dep.Bot.,Univ.Calif., Davis,Calif,U.S.A.) Further studies on comparative mobility of labeled herbicides. Plant Physiol., 1959, 34,(6),613-20, figs.8,bibl.12.

The movement of C^{14} labelled 2,4-D, amitrol, MH, IAA, dalapon, monuron and urea was studied by a radioautograph technique using barley, Zebrina, cotton and potato tuber tissue. The results on barley and potato are illustrated. In both there is the same order of decreasing mobility: MH > amitrol > IAA > 2,4-D. The degree of movement of 2,4-D in barley plants, particularly into the roots, varied with the age of leaf treated. The results are discussed in relation to accumulation in the plant, pathways of movement and the results of practical applications of herbicides. - K.H. [O.W.]

419. LEONARD, O.A. and YEATES, J.S. (Massey Agric.Coll.,Palmerston North,New Zealand). The absorption and translocation of radioactive herbicides in gorse, broom and rushes. Proc.12th N.Z.Weed Control Conf., 1959, 93-8, tabs.5,bibl.5.

The absorption and translocation of C^{14} radioactive 2,4-D, 2,4,5-T, amitrol and MH over a period of 16 days in broom (Cystisus scoparius) seedlings > gorse (Ulex europaeus) seedlings, at temperatures 35°F-70°F and initial applications to one leaf of 5 ml containing 0.125 µl showed that total absorption of amitrol an MH > 2,4-D or 2,4,5-T. Concentration in the growing regions was greatest for amitrol and least for MH. Measurements of the relative accumulation of amitrol or 2,4,5-T in the roots of broom and gorse seedlings and of the % of the original application which was not absorbed by the leaf showed that the most favourable conditions for the absorption and translocation of amitrol over 8 days was humidity 95% and temperature 75°F. The poor absorption and translocation of 2,4,5-T was not improved by addition of wetters. "Tween 20" 0.1% (polyoxyethylene sorbitan monolaurate), "Tween 20" 0.1% + "Varsol" 0.1% (dicotyl ester of sodium sulphosuccinate) + triethanolamine. Application of amitrol and 2,4,5-T solutions (5 µl) over 15 rather than 1 leaflet increased the absorption during 10 days. Distribution of radioactivity in stems of Juncus polyanthemos 14 days after treatment in June (11 in. from top of shoot) or in November (4 in. beneath flower) showed that in both seasons amitrol concentrated in the apical part of the stem. Translocation downwards in June was less than in November. Transport of 2,4-D was limited, except downwards in November. Amitrol and 2,4-D were more concentrated in the vascular tissues than in the pith. Using J. polyanthemos and J. pallidus no relation between type of pith and translocation of herbicide was observed. M.E.L. [O.W.]

420. ELIASSON, L. (For.Res.Inst., Stockholm 51,Sweden). Growth response of pea roots to 2,4-D applied to the hypocotyl. Physiol.Plant., 1959, 12,(4),834-840, figs. 6,bibl.9.

0.1-1.0 µg 2,4-D applied in solution to the hypocotyls of pea seedlings caused inhibition of root elongation and swelling of the roots. When the roots were immersed in 2,4-D concentration was greater in a small volume of recirculated solution than in a continuously renewed flowing solution. This was taken to indicate that a leakable growth-inhibitory substance was formed in the roots in the presence of 2,4-D. -C.C.McC. [O.W.]

421. FERENCZY, L., MATOLCSY, G. and MATKOVICS, B. Comparative study of the effect of 1-naphthylacetic acid (NAA) and and 2,4-dichlorophenoxyacetic acid (2,4-D) and their nitriles (NAN and 2,4-DN) on root growth. Acta Univ.Szegediensis, Acta Biol. [N.S.], 1958, 4,1-7,

Seedlings of Beta vulgaris, Cannabis sativa, Cucumis sativus, Lactuca sativa, Linum usitatissimum, Medicago sativa, Raphanus sativus and Solanum lycopersicum were grown on agar with or without 3 concentrations of the title acids or their nitriles, and the length of roots was measured. Compared with controls the nitriles were less inhibiting than their corresponding acids. This difference was much greater in the case of NAA than in that of 2,4-D. - Chem.Abstr., 53,13489f.

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The cress root, and the maize root tests were used to assess the growth regulating activity of the following: 2-chlorophenoxy-, 4-chlorophenoxy- and 2,3,4-trichlorophenoxy-acetic,propionic, butyric and isobutyric acids; 2-chlorophenoxy-, 3-chlorophenoxy-, 4-chlorophenoxy-, 2,3-dichlorophenoxy-, 2,4-dichlorophenoxy-, 2,5-dichlorophenoxy-, 3,4-dichlorophenoxy-, 2,3,4-trichlorophenoxy-, 2-methyl-4-chlorophenoxy-, 2-methyl-5-chlorophenoxy, 3-methyl-4-chlorophenoxy-, 4-methyl-3-chlorophenoxy-, 5-methyl-2-chlorophenoxy-, 2,4-dichloro-5-methylphenoxy-, 2,5-dichloro-4-methylphenoxy-, and 4,5-dichloro-2-methylphenoxy- acetic, propionic, butyric, valeric, caproic and heptanoic acids; and 1-naphthyl-acetic, propionic,

butyric, valeric, caproic and heptanoic acids. The "α-hydrogen" effect was observed to operate for the 2-chlorophenoxy- and the 3-chlorophenoxy- series in both tests. The 2,3,4-trichlorophenoxy- series showed activity in the cress root test with all 4 members of the series. The 17 series of ω-aryloxyalkanecarboxylic acids were investigated to determine whether a β-oxidation mechanism was operative in root as well as in shoot tissue. The evidence suggested that such an oxidation process does in fact take place. There were, however, certain notable anomalies in both tests which were not explicable simply on the basis of a β-oxidation mechanism. It was concluded that growth response is so complex that no one theory is adequate to cover all types of activity or inactivity as reported here. It was also concluded that the reactions to auxins of roots and shoots are not fundamentally different. - Mainly From Author's Summary. - D.M.L.S. [L.U.]

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MH + gibberellic acid or + kinetin or + indolylacetic acid, all at 1 and 10 p.p.m., decreased the number of mitotic figures. At the lower concentration all compounds acted additively while at the higher concentration (where counts were very low) this was not always the case. In the root tips treated with MH 10 p.p.m. ca. 33% of the mitotic figures showed aberrations, including fragmentation and changes which gave the chromosomes a beaded appearance. - L.K. [O.W.]

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The influence of a number of factors on the culture of isolated buds of Pseudotsuga taxifolia is reported. Growth regulating substances, including IAA, 2,4-D, MCPA, 2,6-dichlorophenoxyacetic acid and 2,3,5-triiodobenzoic acid, gave no stimulatory effect and higher concentrations were inhibitory. - K.H. [O.W.]

425. THRESH, R.F. (Bedford Coll.Univ. London,England). Studies on the effects of the applications of synthetic growth substances on the natural hormone content of plants. Ph.D.Thesis Univ.Lond.(Bedford Coll.), 1956, pp.115, figs.35,tabs.6,bibl.64.
2,4-D, 2,3,5-triiodobenzoic acid (TIBA) and MH were applied to pea, bean and sunflower seedlings at non-toxic levels but in sufficient quantities to cause well-marked growth responses. Alcoholic extracts of treated and normal plants were then analysed by paper partition chromatography and estimations of the quantities of active growth substances determined by a direct, sensitive bioassay of the developed chromatogram. Indolylacetic acid and a second inhibitory acidic compound were recorded in all tissue extracts. At least 3 other active growth substances were detected in certain tissues. Only the effects of treatments on the IAA levels were followed in detail. 2,4-D had no detectable effect on the IAA level in either root or shoot extracts. It is concluded, therefore, that 2,4-D exerts its effects on growth directly and not via a disturbance of IAA metabolism. There were indications that growth of pea seedlings in MH may slightly increase the level of IAA in their roots, but further work is necessary. Growth of pea seedlings in TIBA solutions caused a marked reduction in the IAA content of the roots. The implication of this result is discussed in relation to the physiological and morphological responses of plants to TIBA treatment. - From Author's Summary. - D.M.L.S. [L.U.]

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From Chem.Abstr., 53,14425a.

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From Chem.Abstr., 53,14425c.

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From Chem.Abstr., 53, 14425e.

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tobacco quality. Tobacco Sci., (n.d.), 3,79-80.
From Chem.Abstr., 53,14424i.

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The form and structure of the cuticularised layers of leaves of a variety of species was studied by electron microscopy. The channels by which wax reaches the leaf surface and the growth of epidermal walls are considered in the light of the results obtained. Enzymatically isolated cuticular membranes of Hedera helix were tested for permeability to water and 2,4-D (sodium). Permeability to water increased with age of leaf. In contrast permeability to 2,4-D decreased in older leaves. - K.H. [O.W.]

431. GENTILE, A.C. and FREDERICK, J.F. (Dep.Bot.,Univ.Mass.,Amherst,Mass.,U.S.A.) Chemical activity of the glucose adduct of 3-amino-1,2,4-triazole. Physiol.Plant., 1959, 12,(4),862-867, figs.2,tabs.2,bibl.8.
Both in vitro and in vivo, amitrol forms with glucose on adduct believed to be the amine glucoside. This is phosphorylated by hexokinase but more slowly than glucose, although hexokinase activity is unaffected by amitrol. It is suggested that the formation of this adduct may be connected with the herbicidal activity of amitrol. - C.C.McC. [O.W.]

432. NULTSCH, W. (Biol.Inst.VEB Fahlberg-List,Magdeburgh SO, Germany). Zur Frage des Einflusses von Isopropyl-N-phenylcarbamat (IPC) auf die Atmungsfermente der Kartoffel. [The influence of propham on the respiratory enzymes of the potato.] Angew.Bot., 1959, 33,(4),163-5, (G.), figs.2, bibl.9.
Propham and ethyl-N-phenylcarbamate were found to have no effect on the ascorbic acid oxidation nor on the activity of cytochrome oxidase. The sap was expressed, buffered with phosphate, and titrated with 2,6-dichlorophenolindophenol after 15, 30, 45 and 60 minutes. - L.K. [O.W.]

Noted

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Synthesis. To Boots Pure Drug Co. - From Chem.Abstr., 53,14938e.

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Synthesis. To Monsanto Chem.Co. - From Chem.Abstr., 53,15010b. - L.K.

441. GREAT BRITAIN. Aryloxyacetic acid amides. British Patent, 1959, 810 539.
Synthesis. To J.R.Geigy A.G. - From Chem.Abstr., 53,16065a. - L.K.

442. GREAT BRITAIN. 6-Diazo-5-oxonorleucines. British Patent, 1959, 811 103.
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p-Chloroanilinoacetonitrile (I), b0.07 129-33°, is applied as a dust or spray in an oil or water emulsion for use in the defoliation and desiccation of plants, especially cotton. To prepare (I) p-chloroaniline, HCHO, and KCN react in a strongly alkaline medium for 2 hours on a water bath. To J.R. Geigy A.G. - Chem. Abstr., 53,16462c.

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Pentachlorophenol (up to 30%) is mixed with 1-15% of a lower aliphatic alcohol, 3-20% of an alcohol or a ketone having 5-9 carbon atoms, preferably mesityl oxide, and 3-20% of a polyoxyethylene sorbitan fatty acid ester (oleate). A hydrocarbon oil ($\geq$ 50% aromatic compounds) is used as a base. The compositions are stable over long periods and can be diluted with hard water to give stable emulsions. - Chem.Abstr., 53,14405g.

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To increase the effect of $CaCN_2$ against weeds and fungus diseases, additives are mixed with the fertilizers. For example, a mixture of $CaCN_2$ 91, $NaNO_2$ 2.5, dinitro-o-cresol 1.5, anhydride Fe sulphate 2, and $CaSO_4$ 3 parts has a herbicidal effect. A mixture with herbicidal and fungicidal effect contains $CaCN_2$ 93, pentachlorophenol 1, $NaNO_2$ 4, and anhydride $CuSO_4$ 2 parts. - Chem.Abstr., 53, 13496h.

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The process involves the fractionation of 2,3,6-trichlorobenzoic acid (I) from other isomers by the use of Bu acetate, Am acetate or mixtures of the 2 as a solvent, which more readily dissolves (I) than the other isomers. Crude $Cl_3C_6H_2.CO_2H$ (50 g) containing about 60% of (I) and small amounts of the other isomers was mixed with 50 g Am acetate and warmed to effect solution. The solution was cooled and held at 0-5° overnight to precipitate 17.5 g crystals containing 54% 2,4,5-isomer and 23% (I). The remaining solution was mixed with 700 ml H_2O, vacuum distilled down to 500 ml and chilled to precipitate 31.5 g solid, containing 81% (I). Use of this method with Bu acetate gave similar results. - Chem.Abstr., 14059e.

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MISCELLANEOUS

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The booklet is in 3 main parts: (1) general considerations on field experiments, p. 2-30; (2) weed control experiments, p.31-43 and (3) livestock experiments, p.44-49. - L.K. [O.W.]

468. GREAT BRITAIN. Report of the Recommendations Committee 1959. Mimeo. Rep.Brit.Weed Control Coun., 1959, pp.42, tabs.
This report is a supplement of "The Weed Control Handbook 1958" and consists of an index to the main uses of herbicides as contained in the Handbook, and a collection of amendments and additions, to bring the reader up to date with recent developments. No reference is made to sodium arsenite as the British Weed Control Council have recommended that it should not be used as a herbicide or defoliant. - J.W.B. [W24(42)]

469. HILLEBRANDT, P.M. (10 Castlenau Mansions,London,S.W.13,England. The economics of the use of selective weedkillers. Fm Econ.,Oxford, 1959, 9,(5), 209-24, figs.1,tabs.9.
The author presents the results of an investigation into (1) the extent of the use of selective weedkillers on wheat in south-east England and the reasons for the increase in their use and (2) the costs and benefits of their use and the resultant profits. The article is part of a Ph.D. Thesis (See Weed Abstr., 9,206). - D.M.L.S.

470. TIDEMAN, A.F. (Dep.Agric.,Gawler Place,Adelaide,S.Australia). Spraying crops to control weeds. J.Dep.Agric. S.Aust., 1959, 63, (1), 16-19, figs.2, tabs.1.
The economics of spraying are discussed in relation to weed severity, equipment and operating costs, and the advisability of hiring rather than buying equipment for less than 200 acres. - J.W.B. [O.W.]

471. GREAT BRITAIN. Alkali arsenites. Mimeo.Publ.Min.Agric.Fish.Fd, N.A.A.S., 1960, Tech.160,pp.3.
As a result of a recommendation by the Advisory Committee on Poisonous Substances used in Agriculture and Food Storage, consultations took place between the Minister of Agriculture and associations concerned, at which it was agreed that the manufacture of arsenites for use in Britain as potato haulm killers and weedkillers should stop at once and that they should be withdrawn from use in agriculture after the 1960 potato harvest. (Sheep or cattle dips containing arsenite and the use of lead arsenite on fruit trees are not covered by the ban). - D.M.L.S. [O.W.]

472. GREAT BRITAIN. Weeds Act, 1959.
"An Act to consolidate certain enactments relating to injurious weeds" (16th July, 1959). - L.K. [O.W.]

473. DENMARK. Specialpraeparater anerkendte af Statens Fors/gsvirksomhed i Plantekultur til bekaempelse af ukrudt og til tvangsmodning. [Special preparations recognised by the Statens Fors/gsvirksomhed i Plantekultur for weed control and forced ripening.] Tidsskr. Planteavl, 1959, 63,(5),804-11, (Dan.)
Gives trade names, type and content of active ingredient, recognised uses and names and addresses of manufacturers and/or distributors. - L.K. [92(489)]

474. GERMANY. Nachtrag Nr. 7 zum Pflanzenschutzmittel-Verzeichnis 12. Auflage vom März 1959. [Addendum No. 7 to the Pesticide Register 12th Edition of March 1959.] NachrBl. dtsch.PflSchDienst.Braunschweig, 1959, 11, (11),174-5. [O.W.]

475. PETERSEN, H.I. (Statens Ukrudtsfors/g, Skovlunde,Denmark). Erfaringer om virkningen af kemiske ukrudtsmidler i praksis i 1959. [Experiences on the effect of chemical weedkillers in practice in 1959.] Dansk Landbrug, 1960, (1), pp.3, (Dan.), figs.6,tabs.2.
Gives very brief reports from various parts of Denmark under the headings: (1) has the effect of herbicides been satisfactory?, (2) which effects have been inadequate and why? and (3) does injury occur in crops?. - L.K. [93(489)]

476. ALLO, A.V. (Dep.Agric.,Tauranga,N.Z.) Weed problems of the Bay of Plenty. Proc.12th

N.Z.Weed Control Conf., 1959, 17-23.
With reference to: (1) newly developed pasture, (2) low fertility pasture and open swards, (3) high fertility established pastures, (4) the swamp country and (5) cropping and horticultural areas. - L.K. [O.W.]

477. HANNA, L.W. Hanna's handbook of agricultural chemicals. L.W.Hanna, Forest Grove,Ore., 2nd ed., 1959, pp.492, $5.95, figs.,tabs.
This handbook on pesticides contains sections on toxicity, registration and residue tolerances, the Miller Bill and notes on the main characteristics of numerous herbicides. Most of the book, however, deals with pesticides other than herbicides. - L.K. [L.AM.]

478. UBRIZSY, G. Vegyszeres gyomirtas. [Chemical weed control.] Mezogazdasagi Kiado,Budapest, 1958, pp.252, (Hungarian), figs.,tabs.,bibl.
This book deals with: the harmful effects of weeds; how weeds affect crops; the historical background of chemical weed control; the mode of action of growth regulator herbicides; the relation of ecological factors to herbicide action; the effects of herbicides on soil micro-organisms; spraying equipment and spray volume in relation to herbicidal efficiency; how to carry out chemical weed control and common causes of failure; a classification of herbicides; chemical weed control in agricultural and horticultural crops; control of various types of weeds and weeds in various situations and concludes with a table of the susceptibility of ca. 600 weeds to 2,4-D, MCPA, DNOC and dinoseb. - L.K. [O.W.]

479. *UBRIZSY, G. (Res.Inst.Plant Prot., Budapest,Hungary). Vegyszeres gyomirtas. [Chemical weed control.] Foldmuvelesugyi Miniszterium Kiserletugyi Progpaganda Foigazgatosag, (n.d.), pp.24, (Hungarian). [6(439)]

480. LOU, TSENG-HOU, HSIAO, KUANG-YU and SHAO, LI MEI. (Peking Agric.Univ.,China). Chemical herbicides - now and future. Chih Wu Sheng Li Hsueh T'ung Hsun, 1957, 2,10-21.
A review of 45 herbicides, their chemical structures and usages. - Chem.Abstr., 53, 7490f.

481. OSVALD, H., WALTHER, K. and ÅBERG, E. (Kungl.Lantbrukshögskola,Uppsala,Sweden). Kampen mot ogräset. [Weed control.] Växtodling, 1959, 10,224-44, (Sw.e.), tabs.2.
A review of the properties of the more common herbicides. Tables of weed and crop susceptibility to several herbicides are included. - L.K. [O.W.]

List of Common Names and Chemical Abbreviations

The following list, based on that adopted by the Weed Society of America has been approved by the British Weed Control Council, except those marked □.
An asterisk (*) signifies common names approved by the B.S.I.
A plus sign (+) signifies approval by the Weed Society of America.

amiben □+	3-amino-2,5-dichlorobenzoic acid
amitrol +□	3-amino-1,2,4-triazole.
AMS □+	ammonium sulphamate
atrazine □+	2-chloro-4-isopropylamino-6-ethylamino-1,3,5-triazine
barbane □+	4-chloro-2-butynyl-N-(3-chlorophenyl)carbamate
CDAA +	2-chloro-N,N-diallylacetamide
CDEA +	2-chloro-N,N-diethylacetamide
CDEC +	2-chloroallyldiethyldithiocarbamate
chlorpropham *	isopropyl-N-(3-chlorophenyl)carbamate
4-CPA +	4-chlorophenoxyacetic acid
4-CPB	4-(4-chlorophenoxy)butyric acid
2,4-D +*	2,4-dichlorophenoxyacetic acid
3,4-DA +	3,4-dichlorophenoxyacetic acid
dalapon +*	2,2-dichloropropionic acid
2,4-DB *	4-(2,4-dichlorophenoxy)butyric acid
DCU +□	dichloralurea
2,4-DEB +	2,4-dichlorophenoxyethyl benzoate
2,4-DES +*	sodium 2,4-dichlorophenoxyethyl sulphate
dichlone +*	2,3-dichloro-1,4-naphthaquinone
dinosam *	2-s-amyl-4,6-dinitrophenol
dinoseb *	2-s-butyl-4,6-dinitrophenol
diquat +	1,1'-ethylene-2,2'-dipyridylium dibromide
diuron +	N-(3,4-dichlorophenyl)-N',N'-dimethylurea
DMTT +□	3,5-dimethyltetrahydro-1,3,5,2H-thiadiazine-2-thione
DNOC *	2-methyl-4,6-dinitrophenol or 3,5-dinitro-o-cresol
2,4-DP	2-(2,4-dichlorophenoxy)propionic acid
endothal +	3,6-endoxohexahydrophthalic acid
EPTC +□	ethyl-N,N-dipropylthiolcarbamate
erbon +	2-(2,4,5-trichlorophenoxy)ethyl-2,2-dichloropropionate
fenac □ +	2,3,6-trichlorophenylacetic acid
fenuron +	N-(phenyl)-N',N'-dimethylurea
ipazine □+	2-chloro-4-diethylamino-6-isopropylamino-1,3,5-triazine
MCPA +*	4-chloro-2-methylphenoxyacetic acid
MCPB *	4-(4-chloro-2-methylphenoxy)butyric acid
MCPES +	sodium 4-chloro-2-methylphenoxyethyl sulphate
mecoprop *	dl-2-(4-chloro-2-methylphenoxy)propionic acid
MH +□	maleic hydrazide
monuron +*	N-(4-chlorophenyl)-N',N'-dimethylurea
neburon +	N-(3,4-dichlorophenyl)-N'-butyl-N'-methylurea
NPA +	N-1-naphthylphthalamic acid
PCP +	pentachlorophenol
PMA +	phenyl mercuric acetate
propazine □+	2-chloro-4,6-bis(isopropylamino)-1,3,5-triazine
propham *	isopropyl-N-phenylcarbamate
simazine+	2-chloro-4,6-bis(ethylamino)-1,3,5-triazine
SMDC +□	sodium methyl dithiocarbamate
2,4,5-T +*	2,4,5-trichlorophenoxyacetic acid
2,4,5-TB	4-(2,4,5-trichlorophenoxy)butyric acid
2,3,6-TBA +	2,3,6-trichlorobenzoic acid
TCA +	trichloroacetic acid
2,4,5-TES +	sodium 2,4,5-trichlorophenoxyethyl sulphate
2,4,5-TP	2-(2,4,5-trichlorophenoxy)propionic acid
trietazine □+	2-chloro-4-diethylamino-6-ethylamino-1,3,5-triazine
3Y9 □	tris-(2,4-dichlorophenoxyethyl)phosphite

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